DOCUMENT RESUME

ED 479 498 SE 068 137

AUTHOR	Moore, Randy
TITLE	In the Light of Evolution: Science Education on Trial.
INSTITUTION	National Association of Biology Teachers, Reston, VA.
ISBN	ISBN-0-941212-27-0
PUB DATE	2000-00-00
NOTE	127p.
AVAILABLE FROM	National Association of Biology Teachers, 12030 Sunrise Valley Drive, Suite 110, Reston, VA 20191. Tel: 703-264-9696; Fax: 703-264-7778; e-mail: nabter@aol.com.
PUB TYPE	Books (010) -- Reports - Descriptive (141)
EDRS PRICE	EDRS Price MF01 Plus Postage. PC Not Available from EDRS
DESCRIPTORS	Biology; *Creationism; Elementary Secondary Education; *Evolution; Religion; Science Curriculum; *Science Education History; *Science History; Science Instruction

ABSTRACT

This book describes major events in the history of the creationism/evolution controversy in the United States. While writing these chapters, the author visited key places and museums (e.g., the Scopes Trial Museum, Arlington National Cemetery), interviewed important participants in court cases (e.g., Susan Epperson, Don Aguillard), and studied several sources of information (e.g., Susan Epperson's personal papers, archives at Bryan College). Chapters include: (1) "Assuming That Truth is Desirable Banning Evolution from the Classroom"; (2) "With Flaming Banners and Beating Drum The Aftermath of the Scopes Trial"; (3) "I Suppose the Time Has Come The Ban on Teaching Evolution Reaches the U.S. Supreme Court";(4) "If We're Going To Teach Evolution The Aftermath of Epperson v. Arkansas"; (5) "We Can Settle It Once and for AllÉThe McLean Decision Destroys the Credibility of "Creation Science""; (6) "It Seems Only Clear Demanding "Balanced Treatment""; (7) "He Who Troubles His Own House The Lingering Impact of Inherit the Wind"; and (8) "Causes That Stir the World The Lingering Threat. Appendices also included. (SOE)

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In the Light of Evolution

Science Education on Trial

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By Randy Moore

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THE SCOPES TRIAL

Here, from July 10 to 21, 1925, John Thomas Scopes, a County High School teacher, was tried for teaching that a man descended from a lower order of animals, in violation of a lately passed state law. William Jennings Bryan assisted the prosecution: Clarence Darrow, Arthur Garfield Hays and Dudley Field Malone the defense. Scopes was convicted.

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In the Light of Evolution
Science Education on Trial

By

Randy Moore
University of Minnesota
Minneapolis, Minnesota

National Association of Biology Teachers
Reston, Virginia

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National Association of Biology Teachers
12030 Sunrise Valley Dr., Suite 110
Reston, Virginia 20191
Phone: (703) 264-9696
Fax: (703) 264-7778
E-mail: nabter@aol.com
ISBN 0-941212-27-0

Printed in the United States of America

Dedication

I dedicate this book to Tillie, Doyle, and Janice.

About the Author

Randy Moore is a biology professor at the University of Minnesota. He studies plants and teaching, edits *The American Biology Teacher*, and serves on editorial boards of journals such as the *Journal of College Science Teaching*, *Journal of Biological Education*, and *Issues in Writing*. Moore has appeared on a variety of documentaries and other programs about the creationism/evolution controversy, and speaks on the subject throughout the country.

Acknowledgments

I thank Don Aguillard and Susan Epperson for discussing their court cases with me; Richard Cornelius of Bryan College for his insights about the Scopes Trial, BSCS for the use of their facilities; Chris Chantry for her suggestions, help, and patience with formatting and revising the chapters of this book; and the many people who reviewed the chapters and made constructive criticisms of the manuscript.

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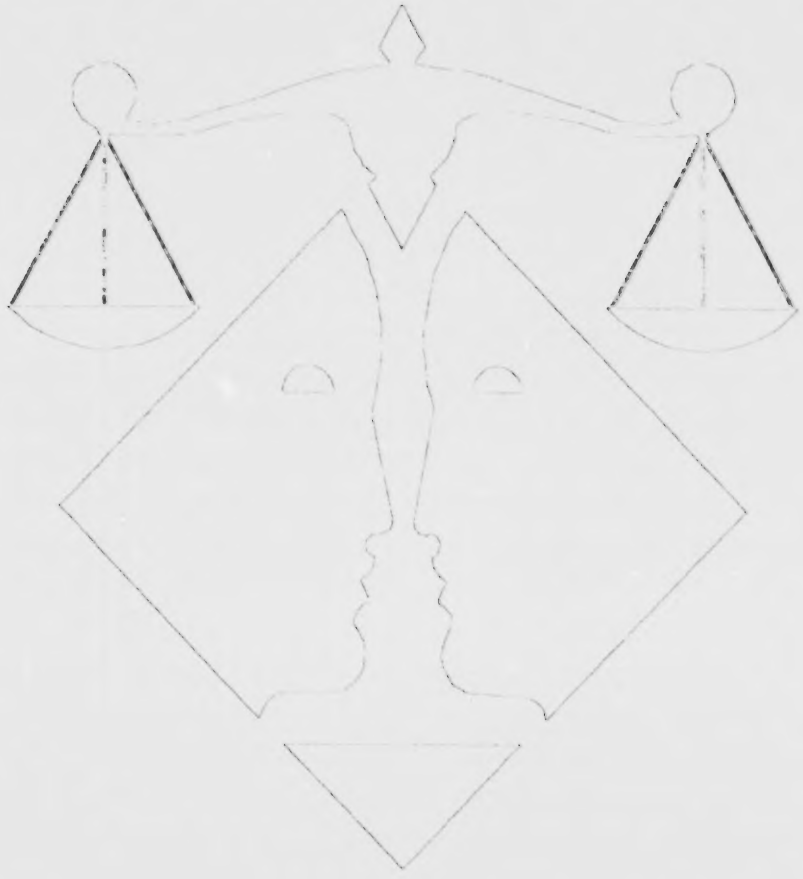


Nothing in biology makes sense except in the light of evolution.
—Theodosius Dobzhansky, 1973

If the Bible and the microscope do not agree, the microscope is wrong.
—William Jennings Bryan, 1925

Preface

The creationism/evolution debate is one of the most emotional and enduring controversies in American history. Although the controversy first attracted the world's attention more than 70 years ago, today the debate continues to divide society—it has been part of presidential campaigns and political platforms, is a common topic of sermons in many churches, and often divides school boards, school administrators, and school teachers throughout the United States. Advocates on both sides of the controversy have often distorted the history of the controversy to promote agendas ranging from the acceptance of racism to the deification of science. The controversy's most famous event—the misdemeanor trial of John Thomas Scopes in 1925—remains a key event in American history. Indeed, that trial has been the subject of numerous books and documentaries (e.g. PBS; Court Television's *The Most Famous Trials in American History*), and was recently voted one of the top 100 news stories of the twentieth century.[1]

Despite repeated predictions to the contrary, the creationism/evolution controversy has not gone away. On the contrary, creationism is now more popular than ever. The overwhelming majority of Americans favor the teaching of creationism with evolution in public schools, and more than 40% of Americans favor the teaching of creationism instead of evolution. In states such as Louisiana, almost one-third of high school biology teachers are creationists and believe that creationism should be taught in their classes.[2] Similarly, states such as Kansas and Kentucky have deleted evolution from their state curriculum guidelines. Most people believe in special creation and want creationism to be taught in schools. In many places, that's exactly what happens.

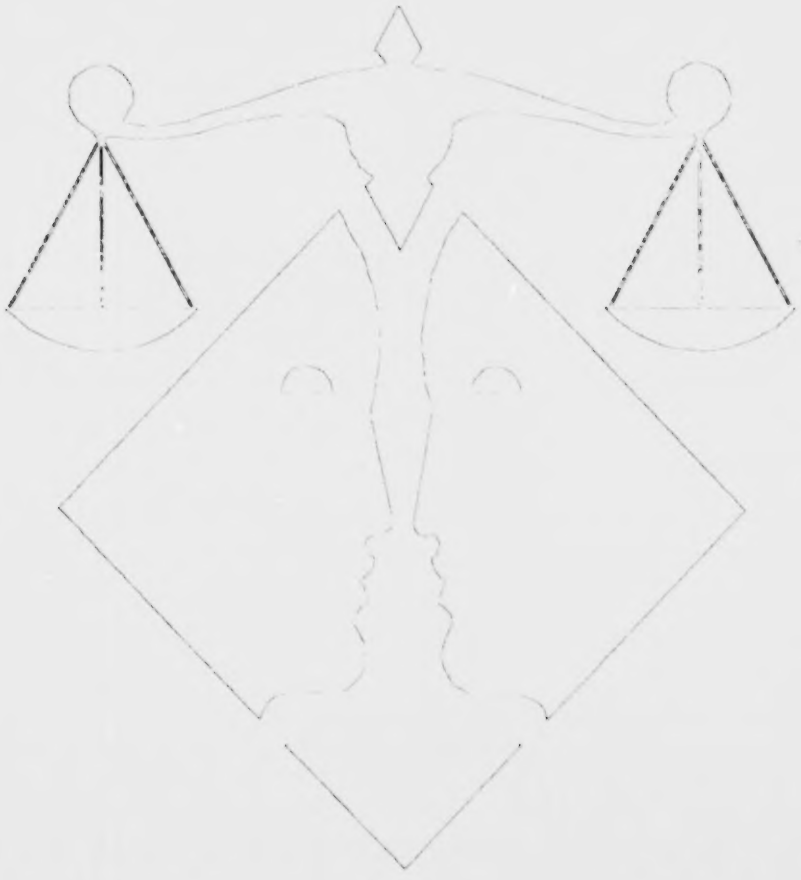
This book describes the major events in the history of the creationism/evolution controversy in the United States. While writing these chapters, I visited key places and museums (e.g. the Scopes Trial Museum; Arlington National Cemetery), interviewed important participants of court cases (e.g. Susan Epperson, Don Aguillard), and studied several important sources of information (e.g. Susan Epperson's personal papers, archives at Bryan College). I've supplemented these chapters with a variety of appendices, including those about Americans' beliefs about human origins, the important court cases in the controversy, Web sites dedicated to the controversy, and interviews with some of the primary participants of the debate.

I hope you enjoy this book.

Randy Moore
August, 2000

[1]Puente, M. (1999). The century's biggest news: list ranks headlines as history—100 events that shifted history. *USA TODAY* (24 February), pp. D1-2. Also see *http://www.newseum.org*

[2]Christensen, J. (1998). Teachers fight for Darwin's place in U.S. classrooms. *The New York Times* (24 November), p. D3.



Keep your Bible in the world of theology where it belongs and do not try to ... put [it] into a course of science.
—Dudley Field Malone, shouting at prosecutors during the Scopes trial; July, 1925

There are about 5,000 scientists, and probably half of them are atheists, in the United States. Are we going to allow them to run our schools?
—William Jennings Bryan, 1925

1

Assuming that Truth Is Desirable...

Banning Evolution from the Classroom

ALTHOUGH evolution is the unifying theme for understanding life and "one of the best documented, most compelling and exciting concepts in all of science" (Gould 1983), it is being challenged—not by new discoveries, but by the evangelical zealotry of religious fundamentalists. Despite consistently clear court-decisions, extensive discreditation of creationism and "creation science," and overwhelming evidence supporting evolution (see Prelli 1989; Hays 1983; Scott 1997; and references therein), creationism remains a popular belief (e.g., Sinclair and Pendarvis 1998; Monsour 1997). For example, a 1996 poll conducted by the National Science Board (1996) reported that most adult Americans reject the idea that humans developed from earlier species of animals. Similarly, a 1999 Gallup poll found that 47% of Americans believe that "God created man pretty much in his present form at one time within the last 10,000 years." Only 9% believe that "Man has developed over millions of years from less advanced forms of life. God had no part in this process" (Appendix 1, Moore 1999; also see Gallup & Newport 1991). By comparison, a majority of scientists take the naturalist view shared by only 9% of Americans. It is hard to imagine any other issue for which there is such a difference between laypeople and experts (see discussion in Shermer 1997).

Given the public's overwhelming acceptance of creationism (see Appendix 1), it is not surprising that creationists' beliefs (and the anti-evolution claims that accompany them) are becoming increasingly common in science classrooms. For example,

- Eve and Harrold (1991) concluded that "over a quarter—and perhaps as many as half—of the nation's high school students get educations shaped by creationist influence—in spite of the overwhelming opposition of the nation's scientific, educational, intellectual, and media establishments."
- A 1986 national study of science teachers found that 45% support the inclusion of creationism in the classroom (Affannato 1986). Many biology teachers avoid teaching about evolution or present it poorly (Monsour 1997).
- In some states, over half of the science teachers and school board presidents favor the inclusion of creationism in the classroom (Zimmerman 1987; also see discussion in Taylor 1992).

Several schools now use the Bible as a textbook for "history" courses, and many biology teachers refuse to discuss evolution in their classes because they fear politically powerful creationists. Similarly, many politicians and administrators subvert the teaching of evolution by requiring the insertion of disclaimers (e.g., stating that evolution is "only a theory") in biology classes and textbooks.[1] Many biology teachers are creationists who reject evolution altogether (e.g., see Lewis 1997; also see Chapter 8). Perhaps this is to be expected; after all, it has always been important to many people—scientists and nonscientists alike—that nature and natural history validate us, both as individuals and as a species. For example, people refused to abandon Aristotle's purposeful and perfect universe, as well as Ptolemy's positioning of Earth in the center of the universe, despite Galileo's evidence against both. The most personal aspect of the secularization of the universe—that is, Darwin's nonpurposeful explanation of life's diversity—has generated the most opposition because it addresses some of our most basic questions: where we came from, how life developed, and how we're related to other organisms. Most people will not accept the fact that humans evolved from (and are therefore related to) other forms of life. Many more people are offended by the idea that if nature reflects

[1]These disclaimers (e.g., see Figure 8.1 in Chapter 8) are ostensibly to promote "critical thinking." However, on 8 August 1997 the U.S. District Court for the Eastern District of Louisiana rejected a policy requiring teachers to read aloud such a disclaimer when they taught about evolution (*Freiler v. Tangipahoa Board of Education*, No. 94-3577 E.D. La. Aug. 8, 1997; the disclaimer said that the only "concept" from which students were not to be "dissuaded" was the biblical story of creation). The court's decision also noted that proposals for "intelligent design" are equivalent to proposals for teaching "creation science." For summaries of the major court cases in the history of the creationism-evolution controversy, see Appendix 2.

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the character of a Creator, then God—at least the one of Charles Darwin's world—often acts randomly, amorally, and cruelly.

Many teachers have misconceptions about the history and legal aspects of the evolution/creationism controversy. For example, most people (and virtually all biologists) think they know what happened at the infamous (and enormously influential) Scopes "Monkey Trial," but they usually don't (Pigliucci 1998); views of that trial—which many people incorrectly believe resulted in a long-lasting victory for evolutionists that transcended the fact that Scopes was, in fact, convicted—have been influenced far more by inaccurate media reports and the admittedly fictitious *Inherit the Wind* than by what actually happened.[2] Similarly, many teachers believe that the U.S. Supreme Court has ruled that creationism is not science. It has not.

This book describes the legal history of the evolution/creationism controversy as a means of highlighting the issues involved in this controversial clash of two powerful constituencies. Understanding the legal history of this controversy can be useful because it can be used to show:

- how scientists respond when their most valued ideas are challenged by nonscientists,
- what arguments scientists use to convince the public and a nonscientific legal system of the merits of their ideas, and
- the importance of the creationism/evolution clash as a cultural struggle for the public schools, which are key to a particular cultural vision's hegemony (Taylor & Condit 1988).[3]

Understanding the rhetorical features of issues such as the evolution/creationism controversy can also reveal aspects of science that are not otherwise readily perceived (Prelli 1989).

Darwin's Ideas in the Courts

Charles Darwin's monumental *On the Origin of Species by Means of Natural Selection* refuted teleology and purpose as explanations of life's diversity, and suggested that humans are not exempt from processes that affect other organisms. Despite *Origin*'s message and implications, there was considerable acceptance of Darwin's ideas by American Protestants. That acceptance resulted largely from the advocacy of Darwin's ideas by Harvard's Asa Gray, an evangelical Christian who was America's leading botanist and president of the American Association for the Advancement of Science (AAAS). Gray, who espoused a progressive, God-driven evolution (which Darwin rejected), arranged for the initial publication of Darwin's *Origin* in the U.S. (see Moore 1997 and references therein).[4] When Gray proclaimed that he had reconciled God and evolution, many American Protestants were put at ease and accepted the idea (Scott 1994). However, that acceptance didn't last long, for by the end of World War I, religious attitudes had shifted; a collective nostalgia for the relative simplicity of pre-war life, combined with a perceived decline in morality, led many people to rely increasingly on their religious faith for stability and comfort. Religious fundamentalism, based on a literal interpretation of the Bible, became popular.[5]

Although fundamentalists disagree on some of the details (e.g., see Scott 1997), the essence of their beliefs is summarized in the following six tenets, each of which arises from a fundamentalist Christian interpretation of the creation story in Genesis (Shermer 1997; Taylor 1992; and references therein):

- Evolution cannot adequately account for the development of life and its various forms.
- The universe, energy and life were created suddenly from nothing by a Creator.
- Humans and apes do not share a common ancestry.
- Changes occur only within fixed limits or within originally created forms of life.
- Geological history is best explained by catastrophism, including a Noachian flood.[6] Many claims of creationists are not falsifiable.[7]
- The Earth is young (less than 10,000 years old).

[2]Scopes' trial was the basis for *Inherit the Wind*, a long-running, three-act play written by Jerome Lawrence and Robert E. Lee in 1950. The play, which opened on 10 January 1955, got its name from Proverbs 11:29, "He who troubles his own house shall inherit the wind, and the fool shall be servant to the wise of heart." For more about *Inherit the Wind*, see Chapter 7 ("He Who Troubles His Own House").

[3]The importance of public schools to a culture was stated explicitly by Supreme Court Justice J. Frankfurter in *Illinois ex rel. McCollum v. Board of Education*, 333 US 203, 231 (1948): "The public school is at once the symbol of our democracy and the most pervasive means for promoting our common destiny. In no activity of the state is it more vital to keep out divisive forces than in its schools . . ."

[4]Gray's *First Lessons in Botany and Vegetable Physiology* (1857; later renamed *The Elements of Botany*) was the leading botany text of the late 19th century, and was the first high school text after the publication of *Origin* to include Darwin's ideas about evolution. Gray, who was America's foremost Darwinist, was the only American taken into Charles Darwin's confidence prior to the publication of *Origin* (Larson 1989). Gray defended Darwin against attacks by biologists such as Harvard zoologist Louis Agassiz and others. Darwin, however, rejected Gray's use of divine providence to explain biodiversity (e.g., see Numbers 1992).

[5]Fundamentalists got their name from a series of 12 small pamphlets (containing 90 articles) titled "The Fundamentals" that were written between 1910 and 1915. These pamphlets proclaimed biblical literalism as the antidote to "modernism." Millions of the pamphlets were given away (Larson 1989). This project was financed by Lyman and Milton Steward, who founded the Union Oil Company (Clouse 1995).

[6]A best-selling book promoting the flood—*The Genesis Flood: The Biblical Record and Its Scientific Implications* (Whitcomb & Morris 1961)—became the flash point for the subsequent demand by creationists for "equal time" in the classroom (see Moore 1998b,c). In *The Genesis Flood*, a classic of creation science, geological issues are presented as being more important than biological issues for discrediting evolution. The book uses photographs taken by

Following World War I and the successful campaign to outlaw liquor, fundamentalists turned their attention to Darwin. Led by religious leaders such as William Bell Riley (founder of the World's Christian Fundamentals Association in 1919), John Roach Straton, John Franklin Norris, Aimee Semple McPherson, and—most prominently—William Jennings Bryan, fundamentalists denounced Darwin's ideas as being responsible for the decline of the nation's morals, and feared that evolution was "the most present threat to the truth they were sure they alone possessed" (Smith 1965).[8] Fundamentalist preachers such as Billy Sunday (a former Chicago Cubs outfielder) used theatrical services to link evolution with eugenics, prostitution and crime; Aimee Semple McPherson presided at ritual hangings of "monkey teachers"; other preachers cited Darwin as a primary supporter of the four "p's": prostitution, perversion, pornography and permissiveness (Gould 1983, Larson 1997, de Camp 1969). To these and other people, anti-evolution laws represented a return to pre-war normalcy, just as creationism in the public schools represented a public validation of a populist lifestyle (Larson 1997; Taylor & Condit 1988).

Forty-three years after Darwin's death, the clash between science and fundamentalism went on trial in Dayton, Tennessee in the infamous "Monkey Trial." Despite the fact that it has often been misreported and misinterpreted (Cornelius 1990), the Scopes trial has profoundly influenced virtually all legislation, court decisions, and local actions involving the evolution/creationism controversy during the past 75 years (Larson 1997; Cornelius 1991). Scopes' trial has become the standard to which all subsequent "evolution trials" have been compared (Cornelius 1991). Although Scopes' misdemeanor carried the same penalties as minor drinking violations heard in batches in Dayton's court every day, it became the basis for one of the most influential and celebrated trials of all time (Larson 1997), as well as an event that shaped the twentieth century (Puente 1999).

Banning Evolution: The Scopes Trial

In the 1920s, religious fundamentalists tried to save the nation's morality by eradicating discussions of evolution from society, beginning with the public schools. One of the first states to consider anti-evolution legislation was Kentucky. In 1921—four years before the infamous Scopes "Monkey Trial"—the Kentucky Baptist Board of Missions demanded that the state ban the teaching of the "false and degrading" theory of evolution at The University of Kentucky, the state's only major university. William Jennings Bryan, the rich, populist Democrat and three-time candidate for president of the United States, joined the Baptists' cause by sending a letter to Kentucky Baptists saying that "the movement [to ban the teaching of evolution] will sweep the country and will drive Darwinism from our schools." Within a month, Bryan addressed a joint session of the Kentucky General Assembly in support of a proposal to ban teaching "atheism, agnosticism or the theory of evolution" in the state's public schools. The legislation was opposed by University of Kentucky President Frank McVey and, after five hours of debate, was defeated by a vote of 42-41 on 9 March 1922. Kentucky's vote was the nation's first ballot on legislation to ban the teaching of evolution, but it would not be the last (One legislator's vote, 1999).

On 24 March 1923, and with little fanfare, Oklahoma Governor John C. Walton (a progressive Democrat) signed America's first anti-evolution law; that law offered free textbooks to public schools whose teachers would not mention evolution.[9] In 1924, the California State Board of Education instructed teachers to present evolution "as a theory only," and the North Carolina Board of Education—with the governor's support—barred public high schools from using biology textbooks that presented an origin for humans that differed from that described in the Bible (Larson 1989). Tennessee and Arkansas, with the support of groups such as the Ku Klux Klan, made it a crime to teach nonbiblical ideas such as evolution in public schools (Larson 1997; Shermer 1997).

The anti-evolution movement reached a worldwide audience in July, 1925, when 24-year-old coach and substitute science teacher John Thomas Scopes (Figure 1.1) volunteered to be tried in Dayton, Tennessee for breaking Tennessee's Butler Law, a four-month-old statute that made it a crime to teach human evolution.[10] The Butler Law, like Scopes' trial, was influenced by William Jennings Bryan. In 1924,

members of the Deluge Geology Society of the Paluxy River bed (near Glen Rose, TX) allegedly showing that humans lived with dinosaurs (Numbers 1992).

[7]Whitcomb and Morris (1961) demonstrate the unfalsifiability of creationists' claims by stating that the "geological record . . . can give no information as to the process . . . employed by God during the Creation, since God has plainly said that those processes no longer operate."

[8]See *http://xroads.virginia.edu/~UG97/inherit/1925home.html*. Some of the other major Web sites containing information related to the creationism-evolution controversy are listed in Appendix 3.

[9]William Jennings Bryan didn't learn about the Oklahoma law until after it passed, even though it had been done in his name. Oklahoma's anti-evolution law was repealed soon after Walton was impeached in 1925. America's second anti-evolution measure became effective on 25 May 1923 in Florida, but it did not have the force of law or any significant impact on teaching. Indeed, the measure was not noticed by the press (Larson 1989).

[10]Scopes, who had intended to leave Dayton for the summer to be with his family, was available for the trial in July only because he had a date with "a beautiful blonde" at a forthcoming church social (Larson 1997). In 1925, Dayton had 1900 residents and nine churches.

Figure 1.1. Three principals of the Scopes trial. Left to right: John Scopes (defendant), John R. Neal (defense attorney), and George Rappleyea (trial instigator). Photograph courtesy of Bryan College.

faced with a fading influence in the Democratic Party, Bryan told his son that he was going to shift "from the politics of ballot boxes to the politics of saving souls" (Scopes Trial Museum). As part of his plan to save souls, Bryan lectured in 1924 in Nashville on "Is the Bible True?" as the legislature was discussing the evolution question (Cornelius 1991). Bryan's lectures catapulted the evolution/creationism issue to public attention. Copies of Bryan's talk were twice sent to the legislators, one of whom was John W. Butler, a part-time teacher and clerk of the Round Lick Association of Primitive Baptists (Scopes & Presley 1967). Butler was a prosperous farmer and legislator who, as the father of five, worried that his children would be corrupted by the public schools [Butler had taken up the anti-evolution cause in 1922 after hearing a preacher tell of a woman whose faith had been shaken after she went to a university and was told about evolution (Scopes Trial Museum)]. In 1924, Butler responded by spending his birthday (17 December) writing House Bill 185, which became known as the Butler Law ("An Act prohibiting the teaching of the Evolution Theory. . ."). That bill, which Butler had promised in an election campaign several

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years earlier, made it "unlawful for any teacher in any of the Universities, Normals and all other public schools of the state . . . to teach any theory that denies the story of the Divine Creation of man as taught in the Bible, and to teach instead that man is descended from a lower order of animals" (Cornelius 1991). Butler's statute was passed without debate by the Tennessee House 75–5 on 28 January 1925, and by the Senate 24–6 on 13 March 1925, after which it was signed—under pressure by fellow Baptists—into law by Governor Austin Peay on 21 March 1925 (thereby becoming Chapter 27 of the Public Acts of Tennessee for 1925). Neither Peay nor the legislature intended to enforce the Butler Law. Peay tried to disarm critics by claiming that "Nobody believes that it is going to be an active statute" (de Camp 1969; Larson 1997). Within just a few weeks, however, some residents of Dayton would use John Scopes to prove the governor wrong.

Scopes' trial—a world-class event in its day—resulted from an ad the ACLU placed in the 4 May 1925 issue of the *Chattanooga Daily Times* saying that "We are looking for a Tennessee teacher who is willing to accept our services in testing this law in the courts. Our lawyers think a friendly test case can be arranged without costing a teacher his or her job. Distinguished counsel have volunteered their services. All we need now is a willing client" (Larson 1997; Irons 1988).[11] Dr. George Rappleyea (Figure 1.1), a chemical engineer and the manager of the ailing Cumberland Coal and Iron Company in Dayton, was intrigued by the ad. With the newspaper in hand, Rappleyea went to a popular local gathering spot—Robinson's drugstore (Figure 1.2)—where he, Fred E.

[11]More than a week before placing the ad, the ACLU released a survey showing that "more restrictive laws had been enacted in the last six months than at any time in the history of the country" (Larson 1997).

Figure 1.2. The Scopes trial was concocted at Robinson's drugstore as a way of generating publicity and enhancing Dayton's economy. Virtually no one in Dayton had an intellectual interest in testing the Butler Law (i.e., the law banning the teaching of human evolution). The phrase "Where It Started" was echoed by a potential juror on Day 1 of the trial. Photograph courtesy of Bryan College.

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"The Hustling Druggist" Robinson (president of the school board and owner of Robinson's drugstore), and other locals decided to concoct a trial to test the law and, more importantly, boost Dayton's economy (e.g., Rappleyea's company and others were having financial trouble; see Allem 1959).[12] When the ACLU offered to finance the case, Rappleyea summoned Scopes to Robinson's drugstore and asked if he'd be willing to be arrested for violating the new law. When Scopes agreed, the *Chattanooga News* was called and the ACLU was told that a test case had evolved (Cornelius 1990). Rappleyea swore out a warrant for Scopes' arrest, after which a deputy found and "arrested" Scopes where Rappleyea said he'd be, in Robinson's drugstore, drinking a Coke.[13] After a preliminary hearing on 10 May, Scopes was arraigned and bound over to the grand jury under $1,000 bond (Figure 1.3). No one—least of all Scopes—anticipated that the case would become one of the most famous trials in U.S. history (Scopes 1961). Indeed, before it was over, Scopes' trial would test the First Amendment's protection of freedom of speech and the establishment of religion, and the Fourteenth Amendment's provision for personal liberty. It would also pit science against religion, the academic freedom of teachers against the academic

[12]Rappleyea disliked fundamentalism, that dislike increased when he heard a fundamentalist preacher tell weeping parents that their dead child was "awrithin' in the flames of hell" because the parents hadn't had the child baptized. According to Rappleyea, "A few days later I heard that this same bunch, the Fundamentalists, had passed that Anti-Evolution Law, and I made up my mind I'd show them up to the world."

[13]The original table from Robinson's drugstore at which the decision was made to test the Butler Law can be seen in the Scopes Trial Museum in the basement of the Rhea County Courthouse in Dayton, Tennessee.

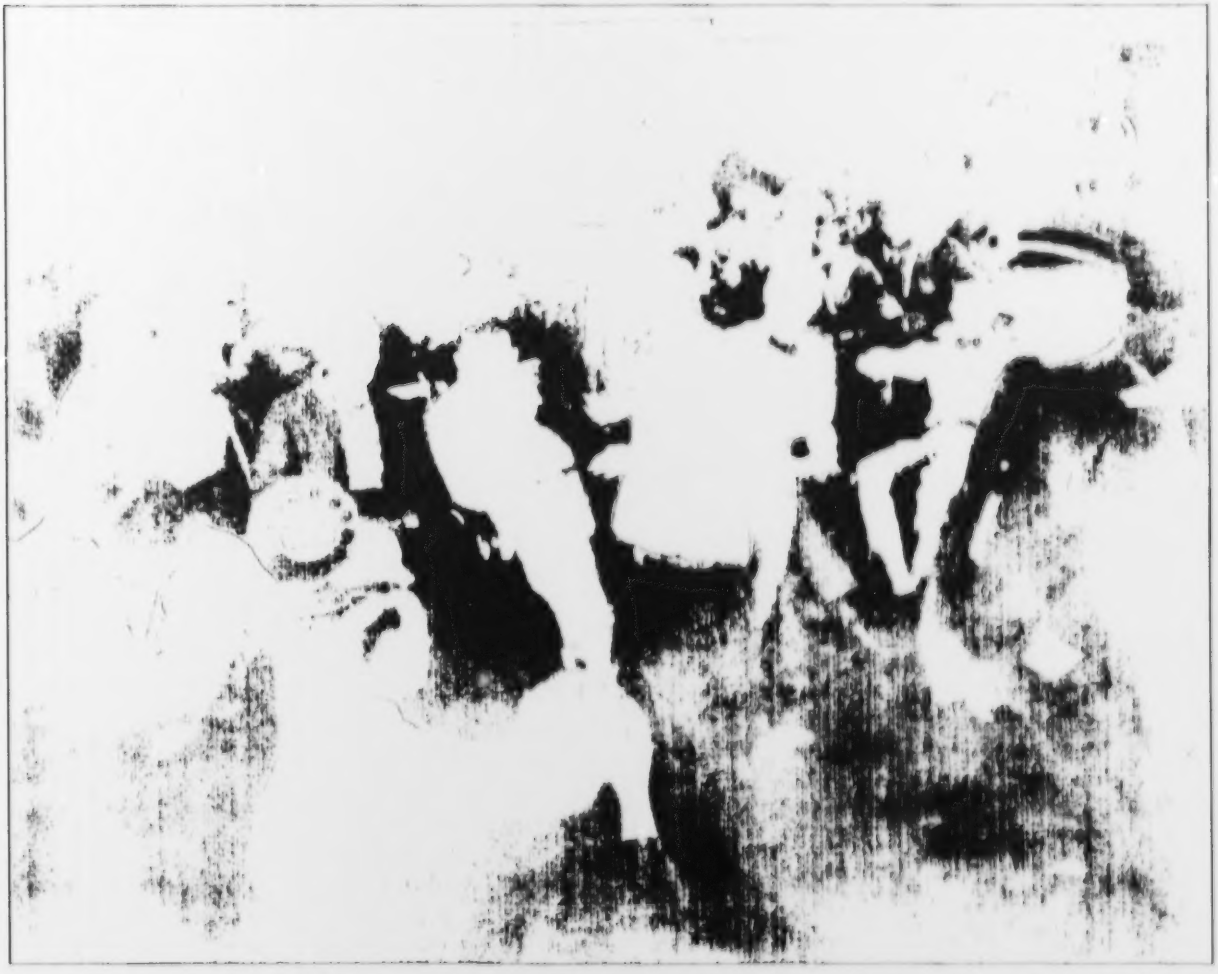

Figure 1.3. John Scopes being arraigned in the Rhea County Courthouse for teaching evolution. Gordon McKenzie is the man to Scopes' right with his hand covering his mouth. Over Scopes' left shoulder is William Jennings Bryan. Photograph courtesy of Bryan College.

freedom of students, and governmental authority against parental rights. Scopes, who described the trial as "a drugstore discussion that got past control," quickly became irrelevant as the trial became a battle of evangelical faith and majoritarianism against scientific secularism and individual liberty (Cornelius 1990).

When word got out that Scopes would test the Butler Law, people quickly began choosing sides. On the same day that Scopes agreed to be tried, the World's Christian Fundamentals Association denounced "the teaching of the unscientific, anti-Christian, atheistic, anarchistic, pagan rationalistic evolutionary theory" (Irons 1988). The American Federation of Teachers then passed a resolution supporting Scopes, noting that:

> *It is neither science nor religion that is on trial, but the public school.*

However, the larger National Education Association rejected a similar resolution as "inadvisable." The Tennessee Academy of Science, which included most of Tennessee's leading scientists, said nothing against the Butler Law until after it became law (Larson 1997).

Scopes' trial (*State of Tennessee v. John Thomas Scopes*, Nos. 5231, 5232 [1925]), which opened on 10 July 1925 and ended on 25 July 1925, was a media circus. Dayton was flooded by a motley assortment of vendors, street salvationists, sincere spectators, and money-based promotions. Adult citizens of Dayton were outraged by the arrival of two apes and Jo Viens [a 1-meter-tall man claiming to be "The Missing Link" (see Dayton Keyed Up, 1925)]; the town's wrath was placated only after it was said that "they may be used to disprove evolution." William Jennings Bryan and the jury visited the "monkey house" and posed for photos at Robinson's drugstore as headlines proclaimed that "Cranks and Freaks Flock to Dayton," "Europe is Amazed by the Scopes Case" (one article in a European newspaper began by stating that "The assumptions of fundamentalism are so preposterous . . ."), and that "Strange Creeds and Theories Are Preached and Sung Within Shadows of the Court House." Princeton president John Hibben denounced the Butler Law as "outrageous" and the upcoming trial as "absurd," and Yale president James Angell reminded people that "the educated man must recognize and knit into his view of life the undeniable physical basis of the world" (Larson 1997). George Bernard Shaw condemned the "monstrous nonsense of Fundamentalism" (see Larson 1997), Albert Einstein noted that "Any restriction of academic freedom heaps coals of shame upon the community," and Luther Burbank (a famed horticulturist well-known to many Tennessee farmers) called the trial "a great joke" (Church 1925; Kuh 1925; Shaw and Coleman on Scopes Trial 1925; Luther Burbank to John Haynes Holmes 1925; Ginger 1958; Larson 1997).

Dayton's visitors included circus performers, "some of the world's champion freaks," monkeys (Mindy the Monkey arrived in Dayton with golf clubs and presented several piano concerts) and monkey-based advertisements by local merchants, religious fanatics (including a hairy prophet who billed himself as John the Baptist the Third), and unabashed religiosity: signs posted outside the courthouse urged "Sweethearts, Come to Jesus," a three-meter banner on the courthouse proclaimed "Read Your Bible," and hand-lettered signs posted by Deck Carter (the self-proclaimed "Bible Champion of the World") warned that the kingdom of God was at hand. *Monkey* became the most popular word in Dayton's vocabulary; documents were delivered by a courier service renamed "The Monkey Express," a constable's motorcycle was labeled "Monkeyville Police," and Robinson's drugstore sold "simian" sodas (Larson 1997). Even William Jennings Bryan exploited the idea:

> *How can teachers tell students that they came from monkeys and not expect them to act like monkeys?*[14]

Dayton—described as being "literally drunk on religious excitement" (Famous Trials in American History)—welcomed about 500 visitors (and almost 200 newspeople) during the trial. The courthouse seated about 400, but 300 more standees crammed in to watch Dayton's most historic event (Famous Trials in American History). More than 2300 daily newspapers tracked the trial; "no periodical of any sort, agricultural or trade as well . . . ignored the subject" (Lienesch 1993). The Chattanooga *Times* published full transcripts of the daily proceedings, and in China alone, 27 newspapers bought and published full telegraphic transcripts of events in Dayton (Metzger 1978; Trial Transcript 1925). Newspapers such as the *New York Journal* gave the Scopes trial front-page coverage in war-type headlines almost 5 cm high (Figure 1.4). Reporters—who often invented stories associated with the case (Allem 1959; de Camp 1968)—came from as far as Hong Kong (Scopes' trial was the first trial in history that included daily broadcasts of trial updates on the radio; see Scopes 1961; Cornelius 1991),[15] and included the cynical and

[14]Bryan, invoking nationalism, later proclaimed (on Day 5 of the trial) that humans didn't evolve from monkeys, "not even from American monkeys." Bryan, who hadn't practiced law in the 30 years before the Scopes trial, believed that 1) there is no scientific proof for human evolution, 2) the teaching of human evolution undermines students' faith and social values, and 3) the "Bible believing" majority should control public schools. Bryan's typical speech in Dayton attacked Darrow and was similar to the many stump speeches he used to attack academic freedom.

[15]Telegraphers sent out 165,000 words per day about the trial; these telegraphers sent more words to Europe and Australia than had ever been cabled about any other event in American history. The trial was broadcast by the *Chicago Tribune*'s WGN radio (Figure 1.3) from the Rhea County Courthouse [at a cost of $1,000

STEINWAY TUNNEL OPENED TO TRAFFIC

FINAL NIGHT EXTRA

NEW YORK EVENING JOURNAL

FINAL NIGHT EXTRA

MONKEY TRIAL LAWYERS FIGHT OVER PRAYER OPENING COURT

Thrill-Slayer Traced to Syracuse

Six Chief Figures in Evolution Case

DARROW OBJECTS TO "TURNING COURT INTO A MEETING HOUSE"

CALLED AT HOME OF

Shepherd Fights for $1,000,000 Estate of McClintock

STEINWAY TUNNEL IS

Figure 1.4. Front-page headline of the 14 July 1925 issue of the *New York Journal*. Darrow's objection to prayers that opened each session of the court was highly unpopular.

caustic H.L. Mencken of the *Baltimore Sun*. Mencken, whose coverage of the trial is ranked as one of the top 10 works of journalism of the twentieth century (Barringer 1999), referred to the people of Dayton as "yokels," "morons," "anthropoid rabble," "gaping primates," and "hillbillies," (among other things) and had to be rescued from an angry mob by the Dayton sheriff (de Camp 1969; Famous Trials in American History). Robinson's drugstore hung a banner that bragged "Where It Started" (Figure 1.2) as Western Union strung extra telegraph wires, the telephone company hired extra staff, Southern Railway added extra service, the Chattanooga-Dayton Bus Line added extra buses (and ran ads urging "Let's All Go To The Scopes Trial"), and the progressive Dayton Club sold souvenir coins stamped with an image of a monkey wearing a straw hat (Larson 1997).

Scopes was tried for teaching evolution as presented in a textbook that he used titled *A Civic Biology: Presented in Problems*, by George William Hunter (Hunter 1914; also see Gillis 1994).[16] Hunter's book, a best-seller in the field, included sections titled "The Doctrine of Evolution," "Evolution of Man," and "Charles Darwin and Natural Selection." Other biology textbooks popular before Scopes' trial (e.g., Moon's *Biology for Beginners* and Gruenberg's *Elementary Biology*) were also proevolution; the word *evolution* appeared extensively, and several chapters were devoted to the topic. Moon's book even identified evolution as a fundamental and unifying concept of biology, noting that "both man and the apes are descended from a common ancestor from which both lines have developed" (Grabiner & Miller 1974). Books that treated evolution cautiously (e.g., *Biology and Human Welfare*, by Peabody and Hunt) excused their caution by citing a report by the College Entrance Examination Board claiming that a thorough treatment of evolution might be too difficult for high school students (Grabiner & Miller 1974).

per day for the telephone line (Cornelius 1991)].

[16]In fact, Scopes was not even in school on the day mentioned in the indictment (he had assigned the evolution chapter on 23 April, but was sick the next day and the class recitation never took place). That is, Scopes didn't "teach" evolution; he merely assigned the offending pages as part of a review for an exam (Larson 1997). The textbook by Hunter, a former biology teacher, was sold at Robinson's drugstore and was the state-approved text in Tennessee high schools (Dayton schools had used the book since 1919). Hunter's book—oriented toward public health rather than theoretical biology—was blatantly racist; in its discussion of five races of humans, Hunter concluded that "the Caucasians represented by the civilized white inhabitants of Europe and America" were "the highest type of all."

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The Primary Players

Scopes' trial was an all but manufactured test case that involved four primary players, all of whom became national bywords:

John Scopes, described by Edward R. Murrow (1950) as "a rather personable" young teacher, encouraged his students to testify at the trial, but never took the stand himself.[17] The regular biology teacher (W.F. Ferguson) refused to participate in the case (Cornelius 1990). Unlike Ferguson, who had a family and administrative responsibilities, Scopes was an ideal defendant: he was single, easy-going, and had no plans to stay in Dayton; he would test the law without making trouble (Larson 1997). Although Scopes knew little about evolution, he opposed the Butler Law; he didn't understand how anyone could teach biology without considering Darwin's theory. However, Scopes was largely irrelevant to the trial; he wasn't told about many of the issues associated with the trial, and when he was late for court, the trial started without him (Larson 1997). Although Scopes was used by others for ulterior motives, he took the issues seriously [he had been a student at the University of Kentucky when its president fought anti-evolution legislation; Scopes admired the president's courage (see above; also see Larson 1997)]. As Clarence Darrow said seven years after the trial, "Scopes was trying to do for Dayton, Tennessee what Socrates did for Athens" (Darrow 1932).

Judge John Tate Raulston, an elected official who chased publicity, felt called by God to preside over the trial. He was also a devout Baptist who lectured Darrow about salvation. Raulston started each day's proceedings with a prayer to the Christian God, during which prosecutors bowed their heads and defendants stared out the window (Larson 1997).

William Jennings Bryan assisted prosecutor A. Thomas Stewart, an Attorney General of Tennessee.[18] Bryan, a former Secretary of State to Woodrow Wilson, championed the creationists' fundamentalist cause.[19] Although Bryan wrote a syndicated weekly column about the Bible and described the Scopes trial as a "contest between evolution and Christianity . . . a duel to the death" (Smith 1965), he did not reject all of evolutionary biology; he merely objected to humans having evolved from other animals (Larson 1997).[20] Bryan—a spell-binding orator who worked on the Scopes case without salary—insisted on the divine creation of humans, and objected to an evolutionary tree because it included humans "in a little ring with lions and tigers and everything that smells in the jungle" (Ginger 1958; Gillis 1994). Bryan believed that evolution was responsible for World War I and the evils of society. As he said in 1923 (Cowen 1986):

> *Ramming poison down the throats of our children is nothing compared with damning their souls with the teaching of evolution.*

By 1924, Bryan had expanded his indictment (Irons 1988):

> *All the ills from which America suffers can be traced back to the teaching of evolution. It would be better to destroy every other book ever written, and just save the first three verses of Genesis.*[21]

Bryan had been instrumental in passage of the 16th Amendment (income tax) and the 18th Amendment (prohibition), and hoped to add an anti-evolution amendment to the U.S. Constitution. Fiery evangelist T.T. Martin's *Hell and the High Schools: Christ or Evolution – Which?*, which laid out Bryan's case against evolution, was a best-seller on the streets of Dayton during the Scopes trial (Martin would later become a field secretary of the Anti-Evolution League of America; see Moore 1998b). When Bryan, a member of the AAAS (Coletta 1964-1969), agreed to participate in the trial on 13 May 1925, the trial assumed major-league status (Cornelius 1991).

Clarence Darrow—the labor advocate who Bryan labeled as "the greatest atheist or agnostic in the United States"—was America's foremost criminal defense attorney of his day and was one of several lawyers for the ACLU-sponsored, pro-evolution defense.[22] Darrow, who had campaigned for Bryan and who believed that Scopes "was indicted for the crime of teaching the truth" (Cornelius 1995; Darrow 1932), "wanted to put Bryan in his place as a bigot" (Smith 1965). Although the ACLU had tried to remove Darrow from the case, Darrow persisted and did an excellent job at the trial (Larson 1997). Scopes' case was the only case for which Darrow ever volunteered his services (Tompkins 1965).

[17]Two of Scopes' students testified at the trial. One of those students, 14-year-old Howard Morgan, was the son of a banker who had given up his home for the Darrows.

[18]The counsel for the prosecution included Bryan (a popular orator on the Chautauqua cultural circuit), Bryan's son (William Jennings Bryan, Jr.), Ben McKenzie (a former Assistant Attorney General and a practicing lawyer in Dayton for more than 30 years), J. Gordon McKenzie (Ben McKenzie's son and former county judge), A.T. Stewart (Attorney General for the Eighteenth Judicial Circuit, which included Rhea County), Wallace Haggard (Fred E. Robinson's brother-in-law), and brothers Sue and Herbert Hicks (Dayton attorneys). Bryan was sent to Dayton by the World's Christian Fundamentals Association. Sue Hicks was the original "Boy Named Sue" of the Johnny Cash hit song (Cornelius 1991).

[19]Bryan had been thrust into national prominence in 1896 (at the age of 36) by his "Cross of Gold" speech at the Democratic Convention in Chicago, where he was nominated for president (that same year, Bryan was nominated for president by seven other parties). Ironically, Darrow was a delegate at that convention. Although Bryan swept the South in each of his three tries for President, he never carried Rhea County, the location of Dayton, Tennessee (Larson 1997).

[20]Bryan's column was published in over 100 newspapers—an estimated readership of 15 million. His weekly Bible class in Miami grew to 5,000 people and met in a park (Cornelius 1997).

[21]Ironically, Scopes had already met Bryan years before the trial; Bryan, who was born in Salem, Illinois, spoke at Scopes' high school graduation there in 1919.

[22]Counsel for the defense included Darrow, John R. Neal (Rhea County native and former dean of the University of Tennessee Law School at Knoxville; Figure 1.1), Arthur Garfield Hays (New York counsel to the ACLU), Dudley Field Malone [New York divorce-attorney and "backslidden" Catholic (see discussion in Cornelius 1991)], W.O. Thompson (Darrow's law partner and replacement for Bainbridge Colby, who resigned the day before the trial started), and F.B. McElwee (one of Neal's former students and replacement for John L. Godsey, who resigned on the first day of the trial). By some accounts, Bryan was out-debated by Malone, a former subordinate of Bryan's in the State Department (when his law practice later declined, Malone gave up law and became a bit-part actor for the next decade). The defense was assisted by librarian and Biblical authority Charles F. Potter, a Unitarian preacher (Scopes & Presley 1967; de Camp 1968).

Before the trial, Bryan campaigned for the Butler Law by writing and lecturing about the scientific and moral failings of evolution. At a rally in Nashville, Bryan proclaimed that scientists "have not found a single link" and—remembering that the Butler Law pertained only to the teaching of human evolution—stressed the missing links between humans and their simian relatives (Larson 1997). Darrow also used the media to make his points (Darrow Likens Bryan to Nero, 1925; Darrow Loud in His Protest, 1925):

> *Nero tried to kill Christianity with persecution and law. Bryan would block enlightenment with law. Had we Mr. Bryan's ideas of what a man may do towards free thinking, we would still be hanging and burning witches and punishing persons who thought the earth was round . . . America is founded on liberty and not on narrow, mean, intolerable, and brainless prejudice of soulless religio-maniacs.*

Throughout Scopes' trial, Darrow tried to replace Scopes' teaching of evolution with Bryan's threat to individual liberty; that strategy persisted until Darrow hounded Bryan into the witness chair on the seventh day of the trial (Larson 1997). Bryan's response to Darrow was simple (Larson 1997; Scopes 1989):

> *Darrow is an atheist, I'm an upholder of Christianity. That's the difference between us . . . If evolution wins, Christianity loses.*

The ACLU staged photo opportunities for Scopes at the Statue of Liberty and in front of the original copy of the U.S. Constitution in the Congressional library, where Scopes professed his "deep" religious feelings (Scopes Rests Hope in U.S. Constitution and Supreme Court, 1925; Larson 1997). Whereas most of the public idolized Bryan, sentiment was fiercely against Scopes and Darrow.[23] Scopes' father attended the trial, as did Butler, who cheered Bryan against the "infidel outsiders."[24] Ben McKenzie, Assistant Attorney General of Tennessee and dean of the local Bar, also invoked regionalism and Southern pride in his attacks on the defense (Famous Trials of American History; Larson 1997):[25]

> *We don't need anybody from New York to come down here to tell us what [the Butler Law] means . . . As for the Northern lawyers, who have come down to teach the "ignorant yokels" what to believe, they had better go back to their homes, the seat of thugs, thieves, and Haymarket rioters, and educate their criminals rather than to try and proselyte here in the South, where people believe in the Christian religion, and know that Genesis tells the full and complete story of creation . . . [It is] better to kill all children under two years of age than to have teachers who will wreck the lives of children with atheist theories which will put them on the toboggan slide which leads to hell.*[26]

Realizing the publicity and economic benefits that the trial could bring, leaders in nearby Chattanooga tried (unsuccessfully) in mid-May to move the trial from Dayton to their Memorial Auditorium; after which they tried to stage their own case involving a Chattanooga teacher (Cornelius 1990, 1995). Dayton's entrepreneurs responded by recalling Scopes from his Kentucky vacation, arranging a special meeting of the grand jury (instead of waiting until the regular session in August), and staging two fights to keep the media interested in the case (Cornelius 1991, 1995). On 2 July 1925 in New York, the defense decided to broaden the case to pit science against Fundamentalism and to sacrifice Scopes' acquittal for the chance to appeal the verdict to a higher court (Allem 1959; Scopes & Presley 1967). Everything was set for "the trial of the century."

The Trial

The Scopes trial opened on Friday, 10 July 1925, two days after the 29th anniversary of Bryan's famous "Cross of Gold" speech. The trial unfolded as follows:[27]

Day 1 (Friday, 10 July 1925): The trial opened with a fundamentalist preacher giving a prayer described by Scopes as "interminable" (that prayer was aimed at the judge and defense, and instructed them to "be loyal to God"). Following the prayer, Attorney General Stewart pointed out that since the trial's verdict would probably be appealed:

> *Both sides are anxious that the record be kept straight and regular, [so] that no technical objection may be made to it in the appellate courts.*[28]

Judge Raulston then read the 31 verses of Genesis I, after which he seated another grand jury that re-indicted Scopes [mindful of the publicity and economic stimulus the trial could produce, Raulston had

[23] Scopes and Darrow received thousands of letters such as this one from a woman in Kentucky: "If you convert everybody to your way of thinking, what will you accomplish? The churches will be torn down, men will have to go armed to protect themselves from murder and lust, and sin will be rampant in the world, for men will not fear God and therefore will do as they please . . . The only thing you will accomplish will be the making of infidels and the sending of innumerable souls to hell," and this one from a man in North Carolina: "God will not permit [you] to live. You are the enemy of everything that is Christian and decent" (Scopes 1989). Scopes burned most of his mail in large bonfires (Moore 1998a).

[24] Although the public liked Bryan, some reporters were biased against him; he was referred to as an "old buzzard" who gave "a grotesque performance . . . touching in its imbecility" (Cornelius 1990). Butler attended the trial after a newspaper offered to pay him for his commentary (Larson 1997).

[25] Two weeks after the trial, McKenzie wrote letters praising Darrow's work at Dayton. When McKenzie was arrested near Dayton for illegally transporting whiskey, Darrow asked if he needed counsel. McKenzie declined Darrow's offer.

[26] References to nationalism and Southern pride occurred throughout the trial, and peaked on Day 5 of the trial when Hicks proclaimed that "The most ignorant man in Tennessee is a highly educated, polished gentleman [when compared] to the most ignorant man in some of our northern states."

[27] Unless specified otherwise, all quotations are from the stenographer's court transcript (Trial Transcript 1925).

[28] Similar concern for a "straight and regular" proceeding was voiced throughout the trial by all parties, including Stewart (Day 1), Raulston (Day 5), and Darrow (Day 6).

allowed Scopes to be indicted on 25 May by a grand jury whose term had expired so that another town did not "steal the show" (see Larson 1997; Cornelius 1991; Scopes 1965)]. The court then chose 12 jurors, three of whom said that they had never read any book except the Bible, and one who admitted that he couldn't read. A local preacher, when being questioned as a potential juror by the defense, was applauded by spectators when he proclaimed that he preached against evolution; he wasn't chosen for the jury (see Scopes 1961).

Day 2 (Monday, 13 July 1925): After an opening prayer, the defense argued that the Butler Law is unconstitutional, adding that it should be overturned so that (Scopes 1961):

> *. . . a teacher may tell the truth without being sent to jail.*

After some preliminary sparing over legalities, Darrow (Figure 1.5) argued that the Butler Law established a particular religion in public schools. He then proclaimed that (Scopes 1961):

> *[Scopes] is here because ignorance and bigotry are rampant, and [that] is a mighty combination.*

When the defense asked if the Butler Law favored Christianity over other religions, Stewart responded that:

> *The state, through the legislature, has the right to control its schools by controlling the content of their curriculum . . . The laws of the land recognize the Bible. We are not living in a heathen country.*[5]

Later, as testimony strayed even further from the Butler Law and the state's ban on teaching evolution, the prosecution asked the judge about the purpose of Darrow's questions. Darrow again made his point:

[5]This position was the basis for the prosecution's later argument to prohibit the expert testimony in support of evolution.

Figure 1.5. Clarence Darrow addressing the jury. Photograph courtesy of Bryan College.

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We have the purpose of preventing bigots and ignoramuses from controlling the education of the United States . . . The fundamentalists will make the ages roll back . . . Ignorance and fanaticism are ever busy and need feeding.

Day 3 (Tuesday, 14 July 1925): When the day started with another prayer, Darrow objected to the prayer and to the jury being present for the discussion of his objection (Figure 1.4). Judge Raulston overruled the objection, after which Stewart referred to Darrow as "the agnostic counsel for the defense" (Darrow later backtracked on his objection). Court was then adjourned for the day to enable Judge Raulston to write a decision about the previous day's challenge to the constitutionality of the Butler Law.

Day 4 (Wednesday, 15 July 1925): After an opening prayer, Raulston overruled the earlier objection that the Butler Law was unconstitutional. Darrow then expressed pride in being an agnostic:

I do not pretend to know where many ignorant men are sure; that is all agnosticism means.

In the afternoon, Scopes pleaded not guilty. Malone told the court that "science and religion embrace two separate and distinct fields of thought and learning" and that "there is no conflict between evolution and Christianity." The prosecution attacked the defense, and testimony was heard from Superintendent of Schools Walter White, School Board Chairman Fred E. Robinson, and two of Scopes' students [Scopes had used a back seat of a taxi to coach the prospective student witnesses on evolution so that they could truthfully say that they learned the subject from Scopes (see Cornelius 1990)]. In the entire trial, these were the only witnesses whose testimony was part of the official court record.[30] Although Scopes later admitted that he wasn't sure if he had taught evolution (Scopes & Presley 1967), he wasn't called to the witness stand because, as Darrow told Judge Raulston:

Your Honor, every single word that was said against this defendant, everything was true.

Day 5 (Thursday, 16 July 1925): After an opening prayer, Attorney General Stewart moved to exclude the testimony of expert witnesses because it would be irrelevant; after all, the validity of evolution wasn't the issue during the trial (it was whether a law had been broken), and the defense had admitted that Scopes had taught that "man descended from a lower order of animals."[31] William Jennings Bryan, Jr. continued the argument, to which the defense responded that expert witnesses were important to show what kind of evolution Scopes had taught and its relationship to the biblical account of creation. After four days of virtual silence, William Jennings Bryan cited Hunter's book and used Darrow's arguments in earlier (and infamous) trials to point out the dangers of evolution being taught and the Bible being excluded from the classroom (Figure 1.6). After his speech, Bryan received loud applause and shouts of "Amen." However, the best was yet to come, as Malone rose to respond for the defense:

I have never seen harm in learning and understanding, in humility and open-mindedness. . . . This is not a conflict of personages; it is a conflict of ideas. . . . There is never a duel with truth; the truth always wins, and we are not afraid of it. The truth is no coward. The truth does not

[30]Day 4 of the trial ended with zoologist Maynard Metcalf on the witness stand saying that "I doubt very much if any two [scientists] agree as to the exact method by which evolution has been brought about, but . . . there is not a single one among them who has the least doubt of the fact of evolution." Metcalf's testimony, as well as that of other expert witnesses for the defense, was not allowed to be considered as evidence in the trial.

[31]Interestingly, Butler argued to let the defense present its evolution experts: "The judge ought to give 'em a chance to tell what evolution is . . . Besides, I'd like to know what evolution is myself" (Famous Trials in American History). One scientist made it to the stand, but Judge Raulston ruled that scientific testimony was not admissible (Scopes 1965).

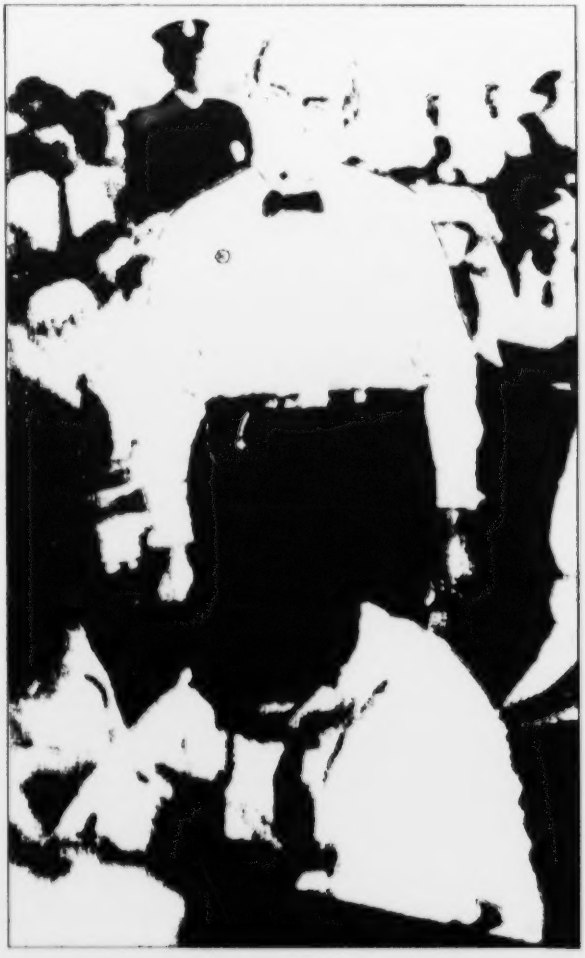

Figure 1.6. William Jennings Bryan addressing the court. Photograph courtesy of Bryan College.

> *need the law. The truth does not need the forces of government. The truth does not need Mr. Bryan. The truth is imperishable, eternal and immortal and needs no human agency to support it. We are ready to tell the truth as we understand it and we do not fear all the truth that they can present as facts. . . . We feel we stand with progress. We feel we stand with science. We feel we stand with intelligence. We feel we stand with fundamental freedom in America. We are not afraid. . . .*

The press, breaking its customary silence of neutrality, gave Malone a standing ovation (the stenographer's transcript noted "profound and continued applause"). Butler described Malone's speech as "the finest speech of the century," and 40 years later Scopes described it as "electric . . . [Malone's] reply to Bryan was the most dramatic event I attended in my life" (Tracy 1925; Butler 1925; Scopes & Presley 1967). Even Bryan conceded that Malone's speech was "the greatest speech I've ever heard." Malone's speech produced bedlam in the courtroom; people applauded and yelled wildly, and a policeman (on loan from Chattanooga) cheered by pounding a nearby table, eventually splintering the table (Scopes 1965). Stewart then proclaimed that he didn't:

> *believe that [he] came from the same cell with the monkey and the ass,*

after which he and Hays finished the day with arguments about legal interpretations of the law.

Day 6 (Friday, 17 July 1925): Another prayer opened what would be the shortest day of the trial. The prosecution claimed that the defense was using the trial for publicity purposes, and Judge Raulston barred scientists from testifying for the defense (Scopes 1961). After some discussion, Raulston agreed to allow the defense to read expert testimony into the record, but not in the presence of the jury (i.e., the expert testimony would not be evidence in the trial). Darrow—realizing that Raulston had ruled for the state on virtually all of the trial's major issues—became sarcastic and accused Raulston of bias against the defense and for the prosecution. Darrow already knew the fate of the case:

> *[We] well know what the judgment and verdict in this case will be. We have a right to present our case to another court and that is all we are after.*

The state rested its case after less than an hour (Larson 1997). At midmorning, Raulston recessed the trial to give the defense time to prepare statements of the expert witnesses.

July 18, 19: To this point, Scopes' trial had been rather dull. Faced with hearing hours of expert testimony being read into the court record, many reporters left Dayton on Saturday. Mencken went home to Baltimore, and the WGN radio crew returned to Chicago; as Scopes would later note, "many of the army of newspapermen had evidently deserted" (de Camp 1968; Scopes & Presley 1967). Even some of the attorneys left: Thompson left for Florida, and William Jennings Bryan, Jr. returned to California. However, others in Dayton suspected that there could be fireworks at the trial when Sunday's *Nashville Banner* reported that the defense was "preparing to spring a *coup d'etat*," (see Larson 1997 and references therein). Monday would prove them right.

Day 7 (Monday, 20 July 1925): The seventh day of the trial opened with a prayer. Judge Raulston then cited Darrow for contempt of court, setting his bail bond at $5000 (Stewart had told Raulston about the significance of the comments made by Darrow on the previous Friday). For the rest of the morning and some of the afternoon, Hays read into the record testimony from the defense's expert witnesses.[32] During a break for lunch during the reading of that testimony, Raulston examined cracks in the ceiling of the first floor caused by the weight of the crowd in the upstairs courtroom, and Stewart arranged for Darrow to apologize to the court for his comments on the previous Friday (Figure 1.7). When court reconvened, Darrow apologized, and Raulston—quoting scripture—forgave Darrow (Figure 1.8). Because of intense heat (the summer of 1925 was one of the hottest and driest summers on record in Tennessee; the jury foreman had requested fans for the jury on Day 4) and a fear that the courthouse floor might collapse under the weight of the throng attending the trial, Raulston reconvened the court on a dais under shade trees on the courthouse lawn (the condition of the courtroom floor was an ongoing concern, for on Day 5 of the trial, Raulston had noted that the floor was "burdened"). Faced with intense heat and the boredom of hearing more statements of expert witnesses, most reporters who hadn't already left Dayton spent the afternoon away from the trial looking for relief from the heat. In fact, only about six reporters heard the dramatic afternoon session.[33]

After Hays finished reading the statements of expert witnesses, Darrow objected to the "Read Your Bible" banner on the courthouse and had it removed (that banner was similar to the one shown in Figure 1.1). Then almost 2,000 spectators watched the trial reach its climax: after earlier baiting Bryan by saying that "Bryan has not dared test his views in open court under oath" (Bryan and Darrow Wage War of Words in Trial Interlude 1925; Darrow's Statement 1925), Hays asked Judge Raulston for permission to introduce one more witness. As Malone

[32]Scientists had dictated more than 60,000 words of testimony supporting the defense. Most of these scientists had left town before Bryan took the witness chair, but their testimony was entered into the record (i.e., not as evidence) with the jury excused. The statement of the final witness, Horatio Newman (Dean of the College of Arts & Sciences at the University of Chicago) concluded by saying that "The evolution principle is thus a great unifying and integrating scientific conception."

[33]Given the drama of the afternoon session, Scopes was conscripted to write news stories for the delinquent reporters (Scopes

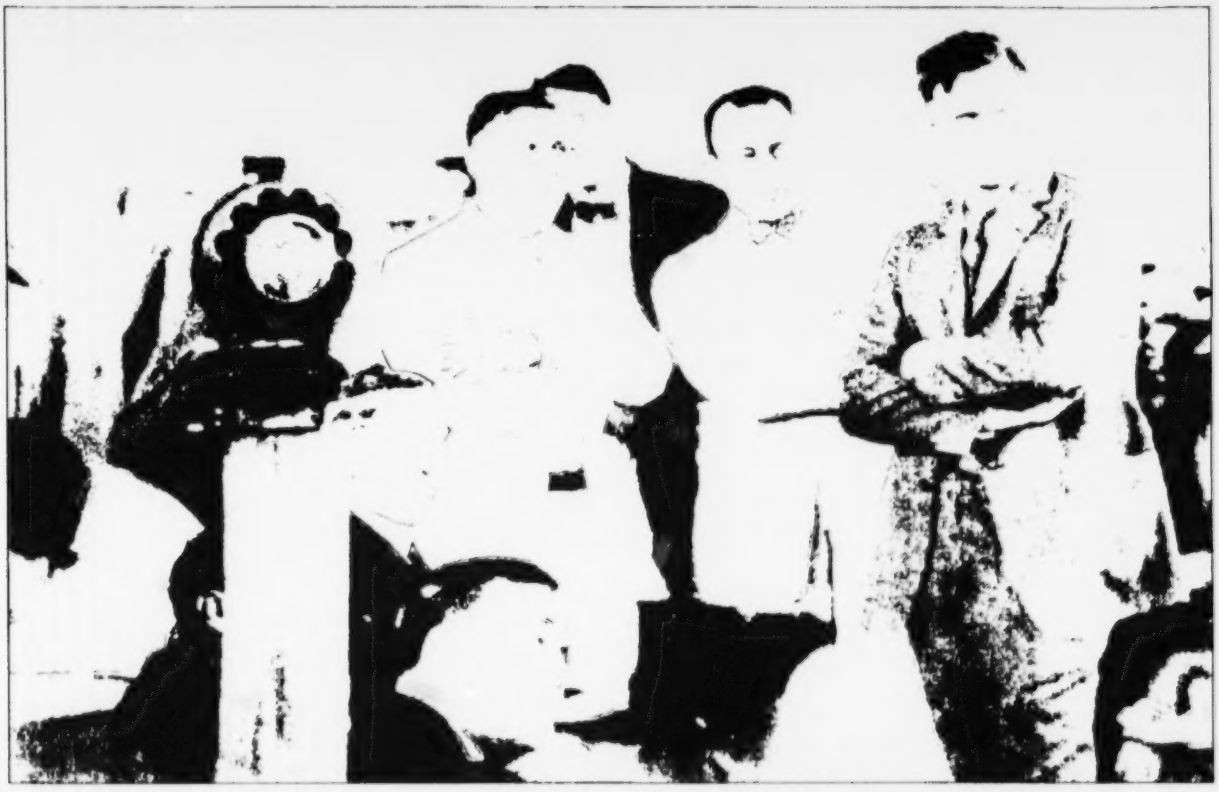

Figure 1.7. Defense and prosecution attorneys listening to Darrow apologize to Judge John Raulston for contempt of court. Left to right: Dudley Field Malone, J.G. McKenzie, Wallace Haggard (half hidden), Herb Hicks, and Attorney General Stewart. Photograph courtesy of Bryan College.

whispered to Scopes that "Hell is going to pop now" (Scopes & Presley 1967), Hays announced to the court that:

The defense desires to call Mr. Bryan as a witness.

When Bryan was called to the witness chair (as an expert on the Bible; see Scopes 1961),[34] his hand-fan froze in his hand (de Camp 1969) as the state's other lawyers jumped to their feet to object. Bryan did not have to testify, and Raulston left the decision to Bryan. Bryan—falling for Darrow's trap—took the witness chair:

. . . to protect the word of God against the greatest atheist or agnostic in the United States.

Before agreeing to take the witness chair, Bryan insisted that he would later be allowed to question Darrow, Malone, and Hays (Cornelius 1991; de Camp 1969). After sparring at a distance for more than a week, Darrow and Bryan were set to go head-to-head in a clash of religious faith versus science as the way of best understanding nature (Figure 1.9).

During his 90-minute examination, Darrow covered some 50 topics. He referred to Bryan's "fool religion" and questioned Bryan about his "fool ideas" (e.g., Jonah being swallowed by a whale, Joshua's commanding the sun to stand still to lengthen the day, everyone speaking one language before the Tower of Babel was built, the worldwide flood), eventually forcing Bryan to admit that he didn't believe in a literal interpretation of the Bible. When Darrow asked Bryan how the serpent had walked before God told it to crawl on its belly, the audience laughed and Bryan became flustered. After Darrow told Bryan:

I am examining you on your fool ideas that no intelligent Christian on earth believes,

there was a near-riot and court was abruptly adjourned.

Day 8 (Tuesday, 21 July 1925): Rainy weather moved the trial back indoors for the eighth and final

& Presley 1967).

[34]Hicks had talked about Bible experts on Day 5 of the trial. The strategy to call Bryan as a Bible expert had been planned for several days and rehearsed with Harvard geologist and Baptist Bible school teacher Kirtley Mather, who played Bryan in the rehearsals. When Bryan agreed to take the witness chair, Judge Raulston asked Darrow, "Do you want Mr. Bryan sworn?"; to which Darrow replied, "No . . . I take it you will tell the truth, Mr. Bryan."

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Figure 1.8. Judge Raulston forgives Darrow for his contempt of court. Foreground, left to right: Dudley Field Malone, Attorney General Stewart, William Jennings Bryan, Judge Raulston, Clarence Darrow. Photograph courtesy of Bryan College.

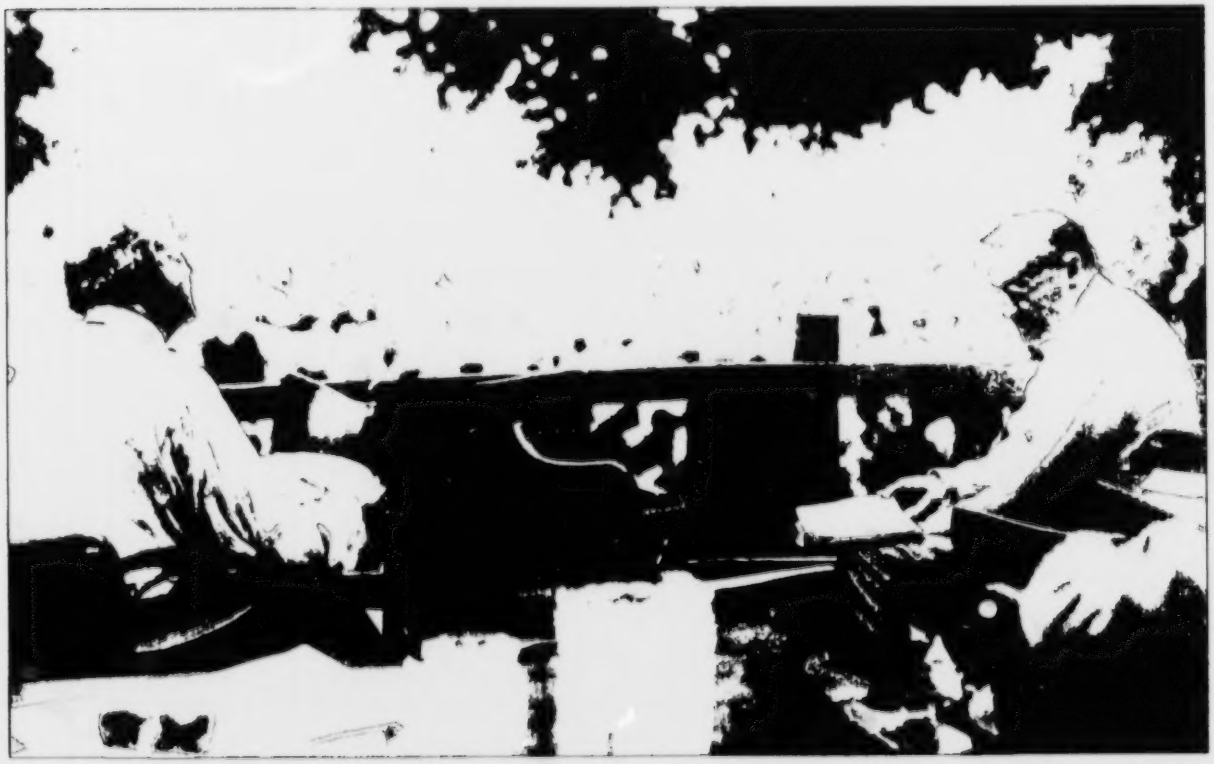

Figure 1.9. The bizarre climax of the Scopes trial occurred on the afternoon of Day 7 (Monday, 20 July 1925) as Clarence Darrow (right) questioned William Jennings Bryan (left) on an outdoor dais. Photograph courtesy of Bryan College.

day of the trial. After an opening prayer, Raulston expunged Bryan's testimony from the record (de Camp 1969; Cornelius 1991) because it:

> *. . . can shed no light upon any issues that will be pending before the higher courts.*[35]

Darrow then told Judge Raulston:

> *I think to save time we will ask the court to bring in the jury and instruct the jury to find the defendant guilty.*[36]

During a discussion that followed, Stewart (correctly) stated that the jury should set Scopes' fine. However, Raulston overruled Stewart, after which Darrow promised that the defense would:

> *. . . not take an exception, either way you want it, because we want the case passed on by the higher court.*

Darrow had just sanctioned the error that would ultimately prevent the case from reaching the U.S. Supreme Court (see Moore 1998a). The jury, which during the trial was in court for little more than three hours, deliberated for nine minutes on the courthouse lawn and delivered its verdict: Scopes was guilty of the crime of teaching human evolution.

Raulston fined Scopes $100 [plus costs], the minimum allowed.[37] After being prompted by Neal (Figure 1.1), Raulston asked Scopes if he had anything to say. In his first and last statement to the court, Scopes responded (Smith 1965):

> *Your Honor, I feel that I have been convicted of violating an unjust statute. I will continue in the future, as I have in the past, to oppose this law in any way I can. Any other action would be in violation of my idea of academic freedom . . . I believe the fine is unjust.*

Bryan declared that the trial was about one of the causes that "stir the world," and Darrow said that:

> *Here we have done our best to turn back the tide that has sought to force itself upon this . . . modern world, of testing every fact in science by a religious dictum.*

After another Christian prayer, the original "trial of the century" was over (A Typical Southern Jury 1925). However, its legacy would echo for decades.

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[35] Raulston may have also been influenced by recommendations from the Sheriff and other officials to end the trial as soon as possible to avoid injury; emotions were running high, and both Darrow and Bryan had received threats (de Camp 1968; Harris 1990).

[36] This move prepared the case for an appeal, spared Darrow from having to be questioned by Bryan, and avoided the closing argument that Bryan had been preparing (Scopes 1967). When Darrow waived the closing argument for the defense, the prosecution was denied its opportunity for a closing argument as well.

[37] Mencken, acting on behalf of the *Baltimore Sun*, promised to pay Scopes' fine (Scopes 1965; Olson 1995).

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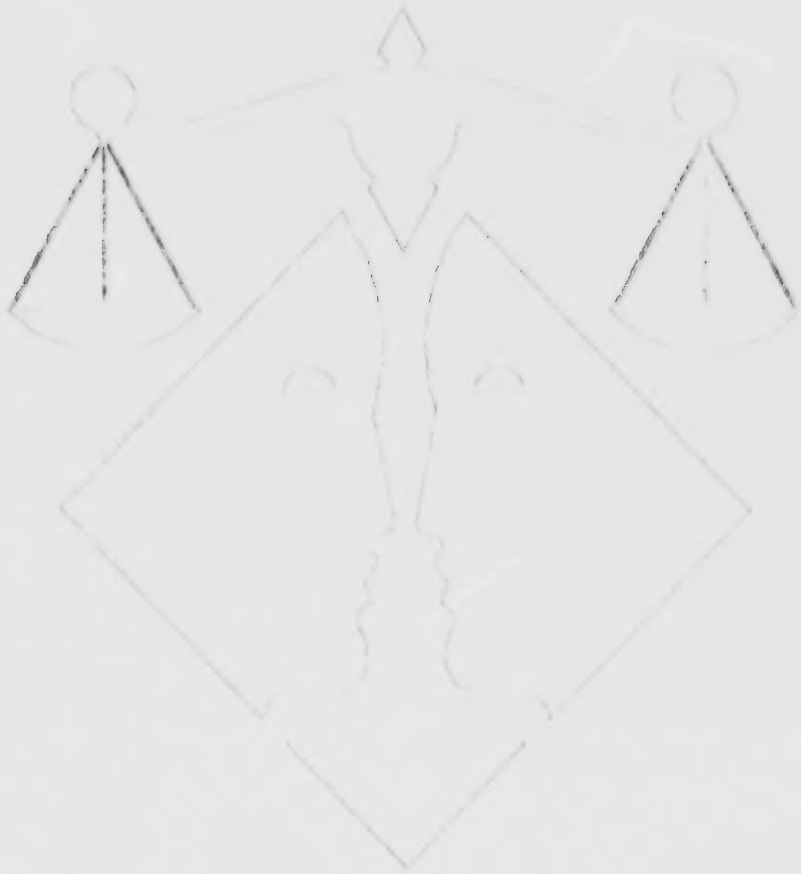


The state of Tennessee doesn't rule the world yet.
—Clarence Darrow, 17 July 1925

Teachers in public schools must teach what the taxpayers desire taught.
—William Jennings Bryan, 1925

2

With Flaming Banners and Beating Drums...

The Aftermath of the Scopes Trial

THE Scopes trial, which was started for economic reasons and fostered for political ones, ended abruptly on 21 July 1925 with the conviction of John Scopes (see Figure 2.1). On the day after the verdict, *The Dayton Herald* (Tennessee) ran a simple headline: "Jury Returns Verdict of 'Guilty' in Scopes Case." The accompanying story summarized many of the events associated with the trial, which it described as "a world-watched, nation-wide drama" that was "the bitterest legal battle ever waged in the United States."[1] As Scopes helped visitors leave Dayton, legislator-turned-correspondent John Butler (who had written the anti-evolution statute for which Scopes was convicted) reported that (de Camp 1968):

> *The Dayton trial is the beginning of a great battle between infidelity and Christianity . . . This is the controversy of the age.*

Others also issued statements. William Jennings Bryan announced that (de Camp 1968):

> *. . . I rejoice that the followers of our Lord and Saviour Jesus Christ are at last awakened to the insidious attacks which have been made, under cover of a scientific hypothesis, upon the authority of the Bible by unbelievers of every grade and class . . . [Darrow] is the finished product of evolution—the most perfect that has yet developed in the United States. He embodies all that is cruel, heartless, and destructive in evolution.*

And in a harsh anti-evolutionary sermon, Ben McKenzie (the oldest of the prosecution lawyers) proclaimed that:

> *The modern-day evolutionist is an atheist, and if he is not an atheist he is an agnostic.*

People everywhere began trying to decide who "won" the trial. An Oklahoma newspaper proclaimed that (Ginger 1958):

> *Mr. Bryan came out more than victorious. He made a monkey out of the defense counsel and left them gasping.*

Others declared Bryan a hero, claiming that he had saved the children of Tennessee from the teaching of evolution (see discussion in Larson 1997). However, many disagreed; for example, *The New York Times* described William Jennings Bryan's performance as "absurdly pathetic," and others declared that "Darrow's manhandling of Bryan had a shattering impact" (Ginger 1958). The *Arkansas Gazette* reported that:

> *For the state of Tennessee, the Scopes trial has been a moral disaster. It will plague the citizen of Tennessee wherever he may go.*

H.L. Mencken (1925) wrote that:

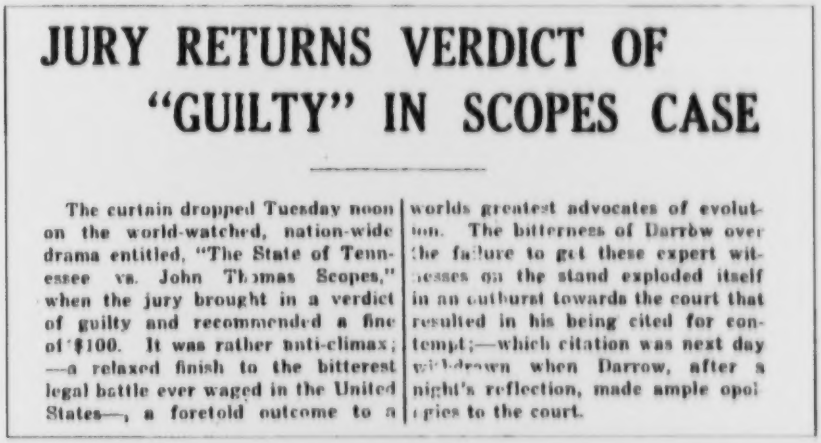
> *On the one side was bigotry, ignorance, hatred, superstition, every sort of blackness that the human mind is capable of. On the other side was sense. And sense achieved a great victory.*

As both sides claimed victory, editors of newspapers such as *The New York Times*, *The New York Evening Post* and *Chicago Tribune* predicted that the creationism/evolution controversy would continue unabated (Ended at last, 1925; As expected, Bryan wins, 1925; Dayton's "amazing" trial, 1925). They were right.

After the trial, the Rhea County School Board offered to renew Scopes' contract for a year if he would adhere "to the spirit of the evolution law" (Ginger 1958). Scopes rejected the offer and left town to ponder his future.[2] Soon thereafter he accepted a scholarship (offered by scientists and reporters who attended the trial) to attend graduate school at the University of Chicago in September of 1925, and spent the rest of his life as a geologist who only occasionally spoke in public about his trial (e.g., at the 1960 world premiere of *Inherit the Wind* in Dayton,

[1] During and after the trial, activists on both sides of the controversy tried to exploit the public's interest in the issues. On the front page below the article accompanying the headline was an ad titled "Out of the Valley of the Forgotten" that announced a "new book on evolution of the human race." Inside the paper was "a call to arms" for "all men and boys . . . who are not now attending any Sunday school . . . to meet and [learn] more of God's word."

[2] Not surprisingly, Scopes' successor (Raleigh Reece, a reporter from Nashville) was a strict fundamentalist (de Camp 1968; Ginger 1958). George Rappleyea, who kept in touch with Scopes after the trial, noted with great amusement that when Scopes' successor missed the first week of classes in the fall of 1925, his substitute was Darius Darwin (Scopes 1989).



JURY RETURNS VERDICT OF "GUILTY" IN SCOPES CASE

The curtain dropped Tuesday noon on the world-watched, nation-wide drama entitled, "The State of Tennessee vs. John Thomas Scopes," when the jury brought in a verdict of guilty and recommended a fine of $100. It was rather anti-climax; —a relaxed finish to the bitterest legal battle ever waged in the United States—, a foretold outcome to a worlds greatest advocates of evolution. The bitterness of Darrow over the failure to get these expert witnesses on the stand exploded itself in an outburst towards the court that resulted in his being cited for contempt;—which citation was next day withdrawn when Darrow, after a night's reflection, made ample apologies to the court.

Figure 2.1 This front-page headline in the 23 July 1925 issue of *The Dayton Herald* announced that John Scopes had been convicted of teaching human evolution. The events and legend of Scopes' trial have influenced all subsequent aspects of the creationism/evolution controversy.

where he was given a parade and a key to the city; see Cornelius 1991).[3] In doing so, Scopes passed up many lucrative offers to cash in on his fame (e.g., a New York agent offered Scopes $2,000 per week to appear in *Tarzan* movies, and another offered him $50,000 to lecture about evolution from a Vaudeville stage; see Scopes 1989). As Scopes said 39 years after the trial (Tompkins 1965; Scopes & Presley 1967):

> *Least of all did I want to make a quick dollar out of my experience; I had too much respect for the issues involved in the trial . . . I knew that none of these offers . . . could give me two things I wanted above all else: peace and emotional stability . . . I could not live happily in a spotlight.*

Within a year after the trial, Scopes was again surrounded by anonymity; he would never again be significantly involved in the issues that stormed about him during the summer of 1925 (Tompkins 1965). However, Scopes' trial would continue to influence the evolution/creationism controversy.

Bryan's Response to Darrow

Darrow's questioning of Bryan at the Scopes trial was based on the assurance that Bryan would have the same opportunity to question Darrow, Malone and Hays. However, local officials told Judge Raulston that they could not guarantee Darrow's safety (Bryan 1925). This, combined with Darrow's request that Scopes be convicted (to provide the basis for an appeal to a higher court), resulted in Judge Raulston changing the course of the trial: he expunged Bryan's testimony from the trial's record and canceled the plan for Bryan to question Darrow. The abrupt end of the trial (i.e., before Bryan could question Darrow) deprived Bryan of making his much-anticipated closing remarks to the court. Journalists and others at the trial were so interested in Bryan's remarks that Bryan promised to prepare them for publication.

On the Thursday after the trial, Bryan suggested that his supporters establish a college for young men on one of the hills surrounding Dayton. Bryan—who had greatly disappointed many fundamentalists three days earlier when he took the witness chair as a "Bible expert" (Moore 1998a)[4]—pledged $50,000 for the college and committed himself to raise the rest of the money necessary to establish the college. For most of that Thursday, Bryan evaluated sites for the college that he had proposed.[5] Two days later, Bryan spoke at the county fair in Winchester, Tennessee, thereby fulfilling a promise to Attorney General Tom Stewart (who later became a U.S. Senator). When he returned to Chattanooga, Bryan visited a doctor, who warned him of diabetes and a heart condition, and recommended that he rest for a few days. In Chattanooga, Bryan also corrected proofs of his 15,000-word speech, which he hoped would ensure support for an anti-evolution amendment to the U.S. Constitution,[6] and maybe even lead to the formation of a

[3] Scopes' application for a fellowship was rejected because of Scopes' godlessness (de Camp 1968). When Scopes returned to Dayton in 1960 for the premiere of *Inherit the Wind*, "Scopes Sodas" were again priced at 15 cents, just as they were during the trial (Scopes 1989; for more about *Inherit the Wind*, see Moore 1998a and references therein). During Scopes' visit to Dayton, a local preacher denounced Scopes as "the devil," and Scopes noted that teachers were still required to pledge that they would not teach evolution (Scopes & Presley 1967). In 1972, Dayton hosted the world premiere of *The Darwin Adventure*, a British-made film about Charles Darwin's voyage aboard the H.M.S. *Beagle*. Francis W. Darwin (Charles Darwin's great-grandson) was a special guest at that premiere (Mercer 1978; Cornelius 1991).

[4] According to one writer, "As a man and a legend, Bryan was destroyed by his testimony that day." Jerry Falwell noted that Bryan "lost the respect of Fundamentalists when he subscribed to the idea of periods of time for creation rather than twenty-four-hour days" (Falwell 1981).

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new political party that would revive his faded hopes for the presidency. That speech, which suggested that evolution would cause students to commit murder, included several indictments that stressed familiar themes:

> *The majority . . . is trying to protect itself from . . . an insolent minority [trying] to force irreligion upon the children under the guise of teaching science. . . Christians . . . oppose the teaching of [evolution] that encourages godlessness among the students. . . Evolution is not truth. . . There is no more reason to believe that man descended from some inferior animal than there is to believe that a stately mansion has descended from a small cottage . . . The law is a very conservative statement of the people's opposition to an anti-Biblical hypothesis . . . What shall we say of . . . those who . . . put a man with an immortal soul in the same circle with the wolf, the hyena and the skunk? . . . Evolution . . . is also creating doubt as to a heaven at the end of life . . . Evolution . . . disputes the truth of the Bible account of man's creation and shakes faith in the Bible as the Word of God. . .*

On Sunday morning, Bryan drove to Dayton, where he made his last public appearance while leading a prayer at the First Southern Methodist Church. That afternoon, the 65-year-old Bryan did the most effective thing possible to rally his fundamentalist supporters: he died in his sleep, just a few blocks from the Rhea County Courthouse.

Many people blamed Scopes for Bryan's death (Scopes 1989). According to this man from North Carolina:

> *The public holds you personally responsible for ending the life of William Jennings Bryan. Mark my word, you are next. God will not permit [you] to live.*

Not surprisingly, anti-evolutionists made Bryan a martyr. Fundamentalists compared Bryan to Christ, and Scopes' defense team to King Herod, Pontius Pilate, and other biblical villains (see discussion in de Camp 1968). Governor Peay proclaimed that Bryan had died "a martyr to the faith of our fathers" and announced a state holiday to commemorate the funeral (Scopes & Presley 1967; Peay 1929). Bryan's funeral was a national event; thousands filed by his open coffin in Dayton. Elsewhere, shops closed and flags flew at half-mast before his burial in Arlington National Cemetery under a small inscription saying that "He Kept the Faith" (see Appendix 4). America's political elite attended the burial, and even Bryan's foes praised his passion and integrity (Larson 1997). Many people wrote "Scopes songs" that lionized Bryan, and the *New York Herald Tribune* wrote that:

> *He tried to do the right thing as he saw it. His passing will be a profound shock to millions who, however often he misled them, looked upon him as their prophet and counselor.*

On 28 July 1925, while Bryan's body still lay in state in Dayton, Bryan's "Last Message" was given to the press (those remarks, which were covered by a face-sized picture of Bryan, were originally titled *Fighting to Death for the Bible*; see Bryan 1925). Although there was relatively little interest in Bryan's remarks (Scopes & Presley 1967), Bryan emphasized familiar themes (e.g., that Christians have a right to control the public schools, that the Bible is true, that science breeds atheism). Bryan repeated his claim that evolution is a "bloody, brutal doctrine," adding that (de Camp 1968):

> *Evolution is not the truth; it is merely a hypothesis . . . it is millions of guesses strung together.*

Appealing Scopes' Verdict

For six months after the verdict, the fate of Scopes' conviction was plagued by confusion, missed deadlines, and conflict.[7] Tennessee's newly elected Attorney General, Frank M. Thompson, was responsible for defending the law before the Tennessee Supreme Court. Despite a serious illness that would soon kill him, Governor Peay, who claimed that the "reckless teaching of evolution" had been converting students to agnosticism "in shocking numbers" (Ginger 1958), also wanted to be involved in the appeal. So did William Jennings Bryan, Jr.

The appeal dragged on for 18 months. John Neal (chief counsel of record) wasted time by filing two

[5]Most of the initial meeting to plan the university was devoted to denouncing Darrow. After gathering pledges of almost $1,000,000 (over half of which was erased by the Great Depression) and a donation of 81 acres by the citizens of Dayton, ground for William Jennings Bryan University (later abbreviated to Bryan College) was broken on 5 November 1926 by Governor Peay before a crowd of more than 10,000 onlookers (Traylor 1990). The college opened in 1930 in the old high school building where John Scopes had supposedly taught evolution. Tobacco and liquor were banned, and applicants for admission had to take a loyalty oath to biblical literalism (Ginger 1958). Today, Bryan College is a 100-acre, nonsectarian, independent, coeducational liberal arts college that enrolls about 525 students committed to Biblical Christianity and whose motto is "Christ Above All." A variety of roads, schools, and other public facilities throughout the U.S. are named after Bryan (Cornelius 1997). Although the Liberal Church of Denver conferred the rank of Bishop on Scopes and Rappleyea, Rappleyea's plans to create a liberal college to offset the plans for William Jennings Bryan University never materialized (de Camp 1968).

[6]Before the Scopes trial, two congressmen (William Taylor of Tennessee and W.D. Upshaw of Georgia) talked about introducing a national anti-evolution bill. However, both later decided that such restrictions were best handled at the local level (de Camp 1968).

[7]The ACLU—which had entered the trial to help publicize the facts of the controversy—spent $8,993.01 on the Scopes case, most of which went to expert witnesses. Scopes' bill for court-costs totaled $343.87, all of which was paid by the ACLU (Scopes & Presley 1967). Darrow and other attorneys worked without pay and paid all of their expenses (Darrow, who had spent about $2,000 of his own money for the trial, told the ACLU that "I don't want you to think about my expenses. I could afford it and I never got more for my money"; de Camp 1968). The ACLU didn't pay off its Scopes-related debts until 1926, thanks to a plea to members of the American Association for the Advancement of Science; that mailing turned the deficit into a surplus of more than $2,000 (de Camp 1968). If churchgoers and lawyers were upset by Darrow's tactics, many scientists were not (Ginger 1958).

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petitions in Federal Court in Chattanooga seeking to halt enforcement of the Butler Law based on two violations of the Fourteenth Amendment: denial of property without due process and denial of equal protection of the law (despite the fact that Scopes had already left Tennessee). Neal and Darrow also requested a federal restraining order on behalf of a Rhea County farmer, who claimed that the Butler Law robbed his children of a proper education (de Camp 1968; Ginger 1958). Meanwhile, opposition to Darrow's involvement in the appeal intensified. Forrest Bailey, an associate director of the ACLU, pleaded with Scopes that someone besides Darrow should handle the appeal, noting that "There is no need for attorneys outside Tennessee"(Scopes 1989). Many viewed Darrow's agnosticism and methods as a deterrent to the appeal, and wanted him excluded. Despite these protests, Scopes stood by Darrow, and Darrow remained on the defense team (Ginger 1958, de Camp 1968). In November, the Tennessee Academy of Sciences—entering the fray for the first time—denounced the Butler Law, soon after which it filed a brief with the Tennessee Supreme Court on Scopes' behalf.[8] The scientists called as expert witnesses in Scopes' trial endorsed Darrow, but Rappleyea and others feared that if Darrow remained on the case (ACLU executive committee 1925):

> *It will not be our cause on trial, but it will be a case of the State of Tennessee vs. Clarence Darrow, the man who spiritually and literally crucified Bryan on the cross examination.*

Amidst charges that someone had tampered with the court record, Neal missed the deadline for filing the bill of exceptions with the Tennessee Supreme Court, thereby precluding the defense from challenging any of Raulston's rulings during the original trial (e.g., his rulings about expert testimony, opening court with prayer, etc.). The only option remaining for the defense was to challenge the validity of the Butler Law (Larson 1997). All of Arthur Hays' standing to say "exception" during the Scopes trial now meant nothing.

The appeal hearing of Scopes' conviction began on 31 May 1926. Scopes, who was spending the summer working for the Illinois geological survey, did not return to Tennessee for the hearing (Ginger 1958). Nevertheless, the courtroom was packed (Tompkins 1965). The continuing defense team of Darrow, Malone, Hays and McElwee was joined by Frank Spurlock of Chattanooga, Robert Keebler of Memphis, Walter Pollack, and Samuel Rosensohn of the ACLU (Cornelius 1991; Ginger 1958). The state was represented by E.T. Seay, K.T. McConnico and William Jennings Bryan, Jr. (who mailed his argument about the police power of the state to control education; see Cornelius 1991). With Butler and Rappleyea sitting on the front row, the hearing began with the state stressing Darrow's agnosticism, the ACLU's radicalism, and Darrow's treatment of Bryan during the trial. The state argued that the legislature had tried to preserve the Bible for all faiths (not just fundamentalists) and cited William Jennings Bryan's undelivered "Last Message" (Bryan 1925; Ginger 1958). The defense responded with the only argument it had; namely, that the Butler Law was unconstitutional because it unreasonably restricted the liberty of teachers and students by establishing a preference in public schools for a particular religion (de Camp 1968; Larson 1997). Darrow chided the fundamentalists:

> *With flaming banners and beating drums, we march back to the glorious ages of medievalism.*

The defense pleaded for "freedom of education" and noted that the teaching of evolution would not cause students to lose faith in God. The Tennessee Academy of Sciences added that the Butler Law would have dire consequences for science education (Supreme Court hears Scopes case, 1926). The state's rebuttal gave the law a secular purpose; Darrow's earlier defenses of murderers and Communists were used to link the acceptance of evolution with the acceptance of murder and communism.[9] The state then equated the ACLU's interest in the case with a pro-Communist agenda, after which the defense argued that the Butler Law promoted fundamentalism and that there is no conflict between the acceptance of evolution and man's divine origin (see discussion in Larson 1997). The gallery cheered when the state's attorney—invoking the majoritarianism legacy of William Jennings Bryan—reminded the Supreme Court justices of the popularity of life-after-death among Tennesseeans and that evolution undermined their faith. He then closed by asking:

> *Would not the state of Tennessee be committing a tragedy . . . if it did not intervene to prevent the teaching in her public schools of a dogma conceded to destroy the minds of the people, whether it is right or wrong?*

Darrow's response linked science with progress and stressed that religion should be a personal issue. Darrow also reminded the court that (Larson 1997; Hutchinson 1926):

> *The future of America's public school system and the complete education of her children can be safeguarded only by wiping this law off the statute books . . . The schools of this state were not established to teach religion. They were established to teach science.*

[8] The brief filed by the Tennessee Academy of Science included a list of "leading ministers" of Tennessee who condemned the Butler Law (the only other group to file a brief was the Unitarian Laymen's League). At the hearing, the Tennessee Academy of Science also contributed to the presentation made by the defense.

[9] Darrow had gained fame by defending socialist Eugene V. Debs and more than 100 accused murderers, including Leopold and Loeb (Cornelius 1990).

Darrow concluded his hour-long presentation to great applause as he said:

> *We are once more fighting the old question, which after all is nothing but a question of intellectual freedom of man.*

The hearing was formal and rather boring; the *Chattanooga Times* described it as "a flop of a news story compared with the trial." The hearing ended not with a dramatic verdict, but with the court taking arguments under advisement.

During the seven months that followed the hearing, both sides were optimistic of victory. The ACLU continued to pursue the case, during which time it became resolute about eliminating Darrow, Malone and Hays from the defense team. Darrow refused to step aside, and Scopes later said that he would have stuck with Darrow. But it was all moot.

On 15 January 1927 the Tennessee Supreme Court announced its split decision. Three judges—a bare majority—upheld the Butler Law as constitutional because 1) it did not infringe on Scopes' individual liberties, and 2) it required the teaching of nothing and therefore did not give preference to any religion (*John Thomas Scopes v. The State of Tennessee*, 154 Tenn. [1 Smith] 105, 289 S.W. 363 [1927]). However, the court reversed Scopes' conviction on a technicality; fines greater than $50 were to be set by the jury, not the judge. The question of who should impose the fine had been discussed at the original trial, but both sides agreed not to raise the issue on appeal [Raulston had given the jury the chance to set a higher fine, but he established the $100 fine that Scopes received (Ginger 1958; Moore 1998a)]. The Tennessee Supreme Court justices ruled that the Scopes case was subject to a retrial, but added that since Scopes was no longer employed by the state (Trial transcript, 1925; Cornelius 1991):

> *We see nothing to be gained by prolonging the life of this bizarre case . . . On the contrary, we think the peace and dignity of the state . . . would be better conserved by the entry of a* nolle prosequi *herein. Such a course is suggested to the Attorney General.*

Tennessee's new attorney general—without comment—complied, thereby leaving the ACLU with no conviction to appeal and closing Darrow's hoped-for route to the U.S. Supreme Court (de Camp 1958). None of the original principals in the Scopes trial was present for the announcement of the decision.

Three days after the Tennessee Supreme Court decision, Darrow—who Attorney General Stewart said was "the greatest menace present-day civilization has to deal with" and had to be suppressed to prevent "more evil" (de Camp 1968; Ginger 1958)—sent an optimistic letter to Scopes. Pushing for a new appeal, Darrow told Scopes that (Scopes 1989):

> *I am pretty well satisfied that the law is dead but we want to make sure, if possible.*

Darrow's hopes were soon dashed; all motions for a new hearing were rejected (the Butler Law would remain on the books for more than 40 more years). The most famous misdemeanor case in American history was over. There would be no more serious attempts to enforce the Butler Law during the remaining four decades of its existence.

The Aftermath of the Scopes Trial

Before the Scopes trial, William Jennings Bryan told reporters that (Cross 1925):

> *It is not the decision but the discussion which will follow that I consider important. It will bring the issue before the attention of the world.*

Two days after the verdict—speaking at the request of Will Rogers from the stage of New York's *Ziegfeld Follies*—Dudley Field Malone described Scopes' conviction as a "victorious defeat" that would ensure that "future generations will know the truth" (Scopes 1961; Ginger 1958). However, it was Bryan who was prophetic, for after the trial, the Scopes trial became infamous[10] and the creationism/anti-evolution movement became increasingly powerful. For example, in Mississippi (which would soon pass its own version of Tennessee's Butler Law), a school superintendent sponsored a bonfire of pages about evolution torn from biology textbooks (de Camp 1969).[11] Similar events occurred elsewhere. Law or no law, many teachers in the South were forbidden from teaching evolution. Most others simply ignored the topic.

Although Scopes knew that his defense had "all of the facts, logic and justice," he also knew that "these weapons are often ineffective in a battle against bigotry and prejudice" (Scopes 1965). He was right. Religious groups—especially the Baptists—denounced Scopes and evolution as "Christless," proclaimed that "every . . . evolutionist . . . is an agnostic, infidel, or atheist," labeled the ACLU as "a diminutive aggregation of atheistic asses," and emphasized "the choice between Christ and Darwin" (The Scopes trial, 1925). Indeed, a resolution adopted by the 1926 Southern Baptist Convention in Houston repudiated (Ginger 1958):

> *. . . as unscriptural and scientifically false every claim of evolution that declared or implies that man evolved to his present state from some lower order of life.*

[10] After the trial, Scopes received two washtubs full of mail per day; mail from all over the world (and in virtually every language) offered condemnation, salvation, and proposals for marriage. Mail filled entire rooms of the house where Scopes was living in Dayton. Scopes and his friends piled the mail in a vacant lot and started a bonfire (Scopes & Presley 1967). Forty years later, Scopes was still receiving an average of one letter per day about his trial (Susan Epperson, personal communication).

[11] A year later, Rappleyea visited Mississippi with hopes of starting another test case. No one was willing to test the law (de Camp 1968).

The Moody Bible Institute Monthly declared evolution to be "propaganda of the Devil" and urged readers to "boycott every school" that taught evolution (Nelson 1925). Repeated references to the Scopes trial spurred sales of the stenographic record of the trial—aptly titled *The World's Most Famous Court Trial* (published one month after the verdict)—to almost 20,000 copies (at $2 each) in less than a year (Cornelius 1990).[12]

Darrow—who accepted only two more cases after the Scopes trial[13]—predicted that young people would soon repeal Tennessee's Butler Law, but he was wrong. After Scopes' trial, the constitutionality of the Butler Law was upheld by the Tennessee Supreme Court. The ACLU looked for another volunteer to challenge the Butler Law after Scopes' case reached a dead end, but "nobody was willing to make the sacrifice" (Larson 1989).[14] By 1932, the ACLU gave up. In fact, once in place, no southern anti-evolution law was repealed for more than 40 years (Larson 1997).[15] No other lawsuits to revoke anti-evolution were filed until Susan Epperson of Arkansas challenged the ban on evolution in 1965 (see Moore 1998b).

Soon after Scopes' trial, the fundamentalist governor of Mississippi predicted that his state would "follow the lead of Tennessee and bar the teaching of evolution in the schools." Supporters of anti-evolution legislation warned that evolution would undermine the state and Christianity, and claimed that 90% of Mississippians supported the legislation; one prominent supporter claimed that it was better to have the leadership of one Christian mother than all the scientists in the world (Larson 1989). When the legislature reconvened, the governor's prediction came true, as it also did in Arkansas.[16] The ACLU repeatedly offered to support a teacher to challenge Mississippi's anti-evolution statute, but there were no volunteers.[17]

There were victories for the anti-evolutionists in 1926–27 at schools such as Baylor University and Oklahoma Baptist University. However, anti-evolution activists also suffered some defeats. For example, the Education Association of Southern Methodists opposed "all legislation that would interfere with the proper teaching of science in American schools and colleges," and one anti-evolution bill was met by a companion bill requiring all water in the state to run uphill (Ginger 1958). In Missouri, a facetious legislator proposed that the penalty for violating a proposed anti-evolution statute be imprisonment "for not less than thirty days nor more than forty nights in the St. Louis Zoo," and another proposed that the bill apply only to areas whose citizens believed that "the earth is flat, that the sun travels around the earth, and that the storms of the sea are caused by the fury of the monsters of the deep." Despite this sarcasm, these anti-evolution efforts were narrowly defeated (Ginger 1958).

Although the front page of the 27 July 1925 *Knoxville News* had lamented William Jennings Bryan's death with a headline claiming that there was "no one left to champion Bryan's causes," a variety of groups (e.g., the Bryan Bible League, the Defenders of the Christian Faith, and the Ku Klux Klan) soon picked up the fundamentalists' creationist mantle.[18] For example:

> The short-lived Supreme Kingdom was formed in January, 1926 in Atlanta, Georgia by Edgar Young Clarke, a shady fundamentalist with a lurid past and an impressive arrest record (Furniss 1963). Clarke, who had been successful as the membership director of the Ku Klux Klan, hired Billy Sunday's business manager to promote his anti-evolution cause. John Raulston, the presiding judge at the Scopes trial, lectured for the Supreme Kingdom (de Camp 1968). After importing John Roach Straton[19] from New York to give 60 lectures about evolution (for the selfless

[12] *The World's Most Famous Court Trial* was originally produced at God's Bible School in Cincinnati, Ohio.

[13] After the Scopes trial, Darrow defended 12 African-Americans in Detroit who had allegedly committed murder while defending their home against a white mob (Ginger 1958).

[14] Despite repeated attempts to overturn the Butler Law, the statute remained on the books (and unenforced) until it was repealed in 1967, following a debate in which a monkey was brought to the Tennessee House of Representatives (Tennessee House votes to repeal anti-evolution law, 1967). As the monkey watched from the well of the House, only two representatives defended the law (Larson 1989), and the repeal bill passed by a vote of 58-27. In the Tennessee Senate, Senator Ernest Crouch (who opposed repeal) read a letter from a soldier in Vietnam whose life, he claimed, had been saved by a Bible he carried in a pocket struck by a bullet (de Camp 1968). The vote initially tied 16-16, meaning that the bill failed. The Senate then amended the existing law to forbid the teaching of evolution "as a fact" (the House voted to table this motion). On a second try, the repeal bill passed the Tennessee Senate by a vote of 20-13. On 18 May 1967, Governor Buford Ellington signed the repeal bill into law, thereby ending the Butler Era (de Camp 1968).

[15] For a discussion of the heritage of the Scopes trial and its players, see Ginger (1958), Marsden (1980), Cornelius (1991) and Larson (1997).

[16] Representatives of student groups in Arkansas denounced the bill, claiming that they "did not want to be laughed at, as are the graduates of the University of Tennessee, and practically boycotted by larger university and medical schools when we seek to pursue our education further" (Ginger 1958).

[17] During a heated debate in the Mississippi Senate, an opponent of the anti-evolution law proposed an amendment to make the penalty "death by burning at the stake, it being the spirit of this bill to restore the Spanish Inquisition" (de Camp 1968). The amendment failed, but the law passed by a vote of 29-16. The Mississippi statute, which later became the last surviving anti-evolution law, was not declared unconstitutional until 21 December 1970.

[18] For more information about the links between creationism and racism, see *http://talkorigins.org/faqs/racism.html#trott* and *http://talkorigins.org/faqs/racism.html#lippard*.

[19] Straton, who announced his candidacy for Bryan's role, challenged Darrow and Malone to debates, but was rebuffed (de Camp 1968).

fee of $30,000), the Kingdom disintegrated amidst a financial scandal.

The Anti-Evolution League of America was presided over by William Jennings Bryan, Jr., who sought to carry on his father's work. However, Junior lacked his father's skills, and soon settled into an undistinguished law practice (de Camp 1968).

The Bible Crusaders of America was formed in Florida in November, 1925 by George F. Washburn, who declared that God had appointed him to succeed Bryan. Washburn, who enlisted virtually all of the leading anti-evolutionists of the day (including John Roach Straton and William Bell Riley), made apocalyptic speeches in which he claimed that "the great battle of the age is now on between Christianity and evolution" (de Camp 1968). The Crusaders' campaign director was wild-eyed evangelist T.T. Martin, a world-class religious huckster.[20]

In 1938, self-described geologist George McCready Price formed the Deluge Geology Society, which limited its membership to people who believed that creation lasted no more than "six literal days, and that the Deluge [was] ... the cause of the major geological changes since creation." The society searched for Noah's Ark, and finally disappeared in the late 1940s.

By 1927, the fanaticism for anti-evolution laws began to fade. Anti-evolution groups such as the misnamed Research Science Bureau and the American Science Foundation declined. Oklahoma, which had repealed its anti-evolution law in 1925, defeated another anti-evolution bill in 1927. Similar legislation in Florida, Delaware, Maine, and elsewhere failed in 1927 as fundamentalists redirected their attacks to Jews, Catholics, and the evils of booze (Ginger 1958).[21]

During the next few decades, creationists changed; whereas creationists at the Scopes trial were "ballyhoo artists ... preachers ... revivalists of all shapes and sects and ... holy rollers" (Hays 1957; Nelkin 1982), more contemporary creationists began using more sophisticated arguments to claim that there is credible scientific evidence to prove the biblical story of creation. By the 1950s, fundamentalists had become more politically active about the perceived loss of traditional values and growing secularism in the United States. By the 1960s and 1970s, creationists organized groups such as the Creation Research Society to promote their beliefs and legislation.[22] This movement emphasized a literal interpretation of the Bible and the Book of Genesis as the only source of knowledge about origins.

The Influence of the Scopes Trial on Biology Textbooks

After the Scopes trial, textbook publishers and school boards throughout the country became reluctant to deal with evolution. The amount of evolution taught in public schools decreased dramatically (Larson 1989), and virtually all publishers removed Darwin's ideas about evolution as the unifying theme of life from their biology books (Grabiner & Miller 1974; Moore 1998c). Within a few months after the Scopes' trial, Texas Governor Miriam Ferguson—the first female governor in the South—ordered her state's textbook commission to delete the theory of evolution from its high school biology books (for years, this ban forced publishers to produce special, sanitized books for use in Texas).[23] The following year, the Louisiana Superintendent of Education took a similar step. Tennessee abandoned George Hunter's popular textbook (i.e., the textbook that Scopes used in Dayton) soon after Scopes was indicted. The publisher of Hunter's textbook gave it a new title (*New Civic Biology*, presumably to distinguish it from the

[20]During Scopes' trial, Martin had set up a booth near the courthouse to sell his book titled *Hell and the High Schools: Christ or Evolution—Which?* (Martin 1923). However, realizing that money could also be made with the evolutionists, Martin later invented a pen-name and wrote "Why Evolution Should Be Taught in Our Schools Instead of the Book of Genesis" (his concealed identity was later revealed). In early 1926, Martin spoke to the Mississippi legislature in support of their anti-evolution statute. Local papers credited the passage of the bill to Martin (Ginger 1958). Martin, who had begun his career as a science teacher at Baylor Female College in Belton, Texas, believed that "next to the fall of Adam and Eve, evolution and the teaching of evolution in tax-supported schools is the greatest curse that ever fell upon this earth" (Numbers 1992).

[21]A relic of the anti-evolution crusade was the passage of laws in many states requiring Bible reading in public schools. Those laws remained in effect for decades until the U.S. Supreme Court ruled them all unconstitutional.

[22]The Creation Research Society (*http://www.iclnet.org/pub/resources/text/crs/crs-home.html*) produces and distributes booklets such as *Science and Creation* (introduced in 28 states in 1973–74), Robert Kofahl's *Handy Dandy Evolution Refuter* (1977), and Kelly Segraves' *The Creation Explanation: A Scientific Alternative to Evolution* (1975). These creationists want "to reach the 63 million children of the United States with the scientific knowledge of Biblical creationism" (Overton 1985). Creationists have influenced legislation in many states. For example, in 1963 Tennessee passed by a vote of 69-16 a bill requiring that all textbooks include a disclaimer that any idea about "the origin and creation of man and his world ... is not represented to be scientific fact" (see Bennetta 1986). Not surprisingly, the Bible—listed as a reference book instead of a textbook—was made exempt from the disclaimer (Shermer 1997). The bill was later appealed by the National Association of Biology Teachers at about the same time that Susan Epperson filed her lawsuit in Arkansas (see Moore 1998b).

[23]Ferguson was actually a stand-in for her impeached husband. As head of the state textbook commission, Ferguson approved Truman J. Moon's *Biology for Beginners*, but only after three chapters that mentioned evolution were deleted. Contracts permitting the removal of offensive pages were arranged with such publishers as Henry Holt, Macmillan, and Allyn & Bacon (Ginger 1958). Ferguson proclaimed that "I'm a Christian mother who believes Jesus Christ died to save humanity, and I am not going to let that kind of rot go into Texas textbooks" (de Camp 1968). The commission threatened to fire any teacher using books that had not been approved.

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previous edition that was linked with the Scopes verdict); when producing the new book, the publisher deleted the section on evolution, deleted charts showing the evolution of species, and added vague qualifiers such as "suggested" and "believed" when describing evolution (Moore 1998c). The word *evolution* disappeared from Hunter's book, as it did from most other biology textbooks (Moore 1998c). After the Scopes trial, one publisher even asked Bryan to endorse its book (Grabiner & Miller 1974; Larson 1997). The anti-evolutionists had won.

In the decades that followed, evolution slowly reappeared in biology textbooks (religious quotations also appeared in many biology textbooks; see Grabiner & Miller 1974).[24] However, the best-selling textbooks downplayed or ignored evolution. Pro-evolution books did not sell well, and the best-selling biology textbook (Baker and Mills' *Dynamic Biology*) did not include the word *evolution*. Indeed, that book even included an attack on evolution, likening Darwin's ideas with Lamarck's and noting that Darwin's theory was "no longer generally accepted" (Grabiner & Miller 1974). That attack on Darwin was followed by a tribute to God (Moore 1998c).

By the late 1950s many legislators worried that the scientific and technological prowess of the United States had fallen behind that of the Soviet Union.[25] In 1958, President Eisenhower requested (and Congress passed) the National Defense Education Act, which encouraged the National Science Foundation to fund and develop state-of-the-art science textbooks (ironically, the National Defense Education Act would be used 18 years later in an attempt to ban the teaching of evolution in public schools; see Moore 1998b). The most important collaboration to result from this legislation involved the American Institute of Biological Sciences, which in 1961 produced textbooks known as the Biological Sciences Curriculum Study (BSCS). These books, which unapologetically stressed evolution as the unifying theme of biology, "put evolution back in the biology classroom." Biologists writing the BSCS books were shocked when they reviewed the competition; as noted by George Gaylord Simpson:

> *One hundred years without Darwin are enough.*

In fact, the 100 years was just the 35 years since the Scopes trial (Grabiner & Miller 1974).

Not surprisingly, the BSCS books were attacked. The harshest attacks occurred in Texas, where the books were denounced in newspapers, in church sermons, and at hearings of the Texas Textbook Commission (Grabiner & Miller 1974). Thanks to the endorsement of the federal government, increased interest in public education, and legal precedents limiting religious influences in public schools (i.e., the same forces that helped overturn Tennessee's Butler Law in 1967; see Grabiner & Miller 1974), the BSCS books were popular and completely transformed the profile of high school biology textbooks. The books were adopted throughout the country, including in the three southern states having anti-evolution laws (Grobman 1969; Skoog 1979). Commercial publishers, trying to keep up, began reinstating evolution in their books (see discussion in Moore 1998c, 2000, and references therein).

After the Scopes trial there were no prosecutions under the various anti-evolution laws. Although the introduction of BSCS's evolution-based books prompted many teachers to question the decades-old laws, no teacher dared risk the defeat and public humiliation that Scopes had endured. Finally, however, a teacher summoned the courage to challenge the law. That teacher was a church-going, 24-year-old woman in Arkansas named Susan Epperson.

[24] Groups such as California State Board of Education argued that the religious quotations made the book worthy of adoption because the quotations showed that the book presented evolution as a "theory and not as an established fact" (see Grabiner & Miller 1974).

[25] These worries were heightened by the Soviet Union's launch on 4 October 1957 of *Sputnik I*, the first orbiting artificial satellite. This launch announced to America that nature's secrets—unlike political secrets—cannot be concealed and that no nation holds a monopoly on the laws of nature (Shermer 1997).

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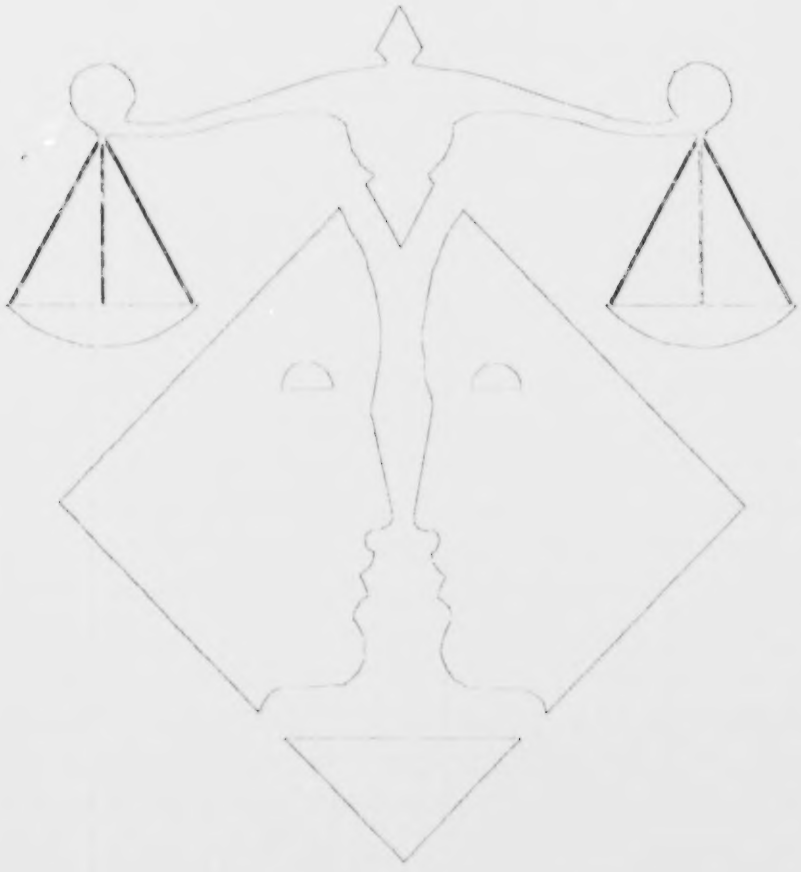


It will probably take another case to clear up the matter.
—Clarence Darrow, upon hearing that the Tennessee Supreme Court upheld Tennessee's Butler Law banning the teaching of evolution, 1927

The disgrace is not the law; the disgrace is that teachers should betray the trust imposed on them by the taxpayers by violating the law.
—William Jennings Bryan, 1925

3

I Suppose the Time Has Come...

The Ban on Teaching Evolution Reaches the U.S. Supreme Court

John Scopes' conviction in 1925 for teaching human evolution gave fundamentalists a victory, just as William Jennings Bryan's death gave them a martyr. Whereas some northern states quietly disposed of anti-evolution legislation after Scopes' conviction,[1] Mississippi and Arkansas passed their own anti-evolution laws. In states that had no anti-evolution laws, there often were local restrictions on the teaching of evolution, as well as enough fundamentalists to keep people "stirred up" (de Camp 1968, 1969). Despite predictions to the contrary, the ACLU could find no one in Tennessee willing to challenge the Butler Law for which Scopes was convicted (Scopes goes free, but law is upheld, 1927; Will ask court to rehear case, 1927). Although none of the anti-evolution laws was challenged for decades, the Scopes trial remained an emotional topic. For example, the *Arkansas Gazette* said in an editorial that "For the state of Tennessee, the Scopes trial has been a moral disaster" (as quoted in Kazan 1966c). Interestingly, it was in Arkansas that the ban on the teaching of evolution would be tested, and eventually overturned.

Banning the Teaching of Evolution in Arkansas

Efforts to pass an anti-evolution law in Arkansas began soon after the Scopes trial. As the fundamentalists' anti-evolution crusade began to lose steam elsewhere, Baptist preacher Ben M. Bogard traveled throughout Arkansas proclaiming the evils of evolution. Spurred on by Bogard's agitation and the legacy of the Scopes trial, the first anti-evolution legislation in Arkansas was introduced on 12 January 1927 by State Representative T.P. Atkins of Prairie County. On the following day, Representative R.L. Rotenberry of Pulaski County submitted another anti-evolution bill. Bogard announced that he saw more promise in Rotenberry's bill, after which Atkins announced that he would withdraw his bill (Kazan 1966c; Anti-evolution in Arkansas, 1966). Supporters of Rotenberry's bill called for a roll-call vote (representatives did not want to go on record as blocking a bill that would keep the Bible in classrooms; see Kazan 1966c), after which the bill was referred to the House Education Committee.[2] At the Committee's first hearing about the bill on 28 January 1927, Bogard pleaded with legislators (Kazan 1966c; Anti-evolution in Arkansas, 1966):

> *I ask in the name of God, don't teach my boy or my girl anything contrary to the Christian religion and make me pay for it . . . I warn you politicians that your folks back home are going to hold you accountable for your vote on this thing.*

The Evolution Committee of the Baptist State Convention also spoke out, warning representatives that:

> *Every county in the state will be organized to defeat those who fail to support the [anti-evolution] bill.*[3]

Only four of the 13 members of the House Education Committee attended a subsequent hearing about Rotenberry's bill on 2 February 1927. At that meeting, Rotenberry read from *Biology for Beginners* (a textbook used in many Arkansas high schools; Moon 1921) and labeled the information "poisonous stuff."[4] The

[1]For example, an anti-evolution bill in Rhode Island was referred to the Committee on Fish & Game, where it died quietly. In Delaware, an anti-evolution bill had a similar fate after being sent to the Committee on Fish, Game, and Oysters (de Camp 1969; also see Moore 1998b).

[2]Rotenberry's bill made it a misdemeanor to teach that "man ascended or descended from any lower order of animals." Like Tennessee's Butler Law, Rotenberry's bill did not prohibit the teaching of evolution; rather, it banned only the teaching of *human* evolution.

[3]The House passed a resolution condemning this action by the Baptist State Convention, but only by a 43-34 vote (Kazan 1966c).

[4]*Biology for Beginners* (Moon 1921) was the last of the evolution books in the 1920s (following the Scopes verdict in 1925, evolution had been deleted from other biology textbooks; see Moore 1998c). Moon's book included several thorough chapters about evolution, and its frontispiece was a picture of Darwin. In the preface, Moon stated that evolution was the fundamental unifying theme of biology. In the 1926 edition, the picture of Darwin had been replaced by a cartoon of the digestive system, and the statement that biology was based on the "fundamental idea of evolution" was replaced by the claim that biology was based on the "fundamental idea of development." A variety of religious quotations were added to the chapters about evolution (see Grabiner & Miller 1974).

next day, the committee—by a 5-2 vote—returned the bill to the House with a recommendation that the bill be rejected. Bogard again reminded legislators that he would take the issue to the people and that:

> *We will defeat every monk or monkey who favors evolution. If that is a threat, make the most of it . . . This all has been brought about by the John D. Rockefeller Foundation, which has been controlled by skeptics and infidels and atheists.*

After a three-hour debate, the House voted 49-48 against the bill. Two dissenting members then changed their vote to yes, and the bill passed 50-47. The bill was then sent to the Senate.

When the bill failed to pass the Senate, Bogard made good on his earlier threat by incorporating [and making himself president of] the American Anti-Evolution Association, an organization that was open to everyone except "Negros [sic], and persons of African decent [sic], Atheists, Infidels, Agnostics, such persons as hold to the theory of Evolution, habitual drunkards, gamblers, profane swearers, despoilers of the domestic life of others, desecrators of the Lord's Day, and those who would depreciate feminine virtue by vulgarly discussing relationships" (de Camp 1969; Antievolution in Arkansas, 1966; McLester 1966).[5] An article in the *Chicago Tribune* ridiculing Arkansas as "being more primitive than the Tennesseans" prompted the *Arkansas Gazette* to give front-page coverage on the next day to a story about nine violent deaths in Chicago (Kazan 1966c).

Bogard, with the help of the Southern Baptists, began a petition drive to get an initiated act on the ballot of the 1928 general election (Larson 1989). The following advertisement was typical of the public appeals used to convince voters to endorse the Arkansas law (Irons 1988; also see *Arkansas Gazette*, Little Rock, Nov. 4, 1928, p. 12, cols. 4–5):

> *The Bible or Atheism, Which? All atheists favor evolution. If you agree with atheism vote against Act No. 1. If you agree with the Bible vote for Act No. 1 . . . Shall conscientious church members be forced to pay taxes to support teachers to teach evolution which will undermine the faith of their children? The Gazette said Russian Bolsheviks laughed at Tennessee. True, and that sort will laugh at Arkansas. Who cares? Vote FOR ACT NO. 1.*[6]

By June of 1928, Bogard filed petitions having more than 19,000 signatures with the Arkansas Secretary of State and the act was placed on the ballot. A few educators (e.g., Virgil Jones of the College of Arts & Sciences at the University of Arkansas) described the bill as "a long step backward," and Hay Watson Smith, a Presbyterian preacher who opposed the bill, argued that adopting the bill would be equal to "going back to the Middle Ages." Nevertheless, the legislation—an adaptation of Tennessee's Butler Law (see Chapter 1) and now referred to as Initiated Act No. 1 (or the Rotenberry Act)—was passed by 63% (108,991 to 63,406) of the voters of Arkansas just three years after the Scopes trial. Initiated Act No. 1 (Arkansas Statutes 80-1267, 1268), the only such law ever approved by a popular vote, read as follows:

> 1. *It shall be unlawful for any teacher or other instructor in any University, College, Normal, Public School, or other institution of the State, which is supported in whole or part from public funds derived by State and local taxation to teach the theory or doctrine that mankind ascended or descended from a lower order of animals and also it shall be unlawful for any teacher, textbook commission, or other authority exercising the power to select textbooks for above mentioned education institutions to adopt or use at any such institution a textbook that teaches the doctrine or theory that mankind descended or ascended from a lower order of animals.*
> 2. *Any teacher or other instructor or textbook or commissioner who is found guilty of violation of this act by teaching the theory or doctrine mentioned in Section 1 hereof, or by using or adopting any such textbooks in any such educational institution shall be guilty of a misdemeanor and upon conviction shall vacate the position thus held in any educational institutions of the character above mentioned or any commission of which he may be a member.*

Soon after passage of Initiated Act No. 1, J.H. Reynolds (President of Hendrix College) predicted that Arkansas teachers would be forced to ignore the law (Anti-evolution in Arkansas, 1966). In the few communities where evolution was accepted, the law slipped into antiquity. In places where fundamentalists ruled, teachers avoided talking about evolution or presented it apologetically (Keienburg 1978). Regardless, in 1928 it became a crime to teach about human evolution in Arkansas.

Attempts To Repeal the Anti-Evolution Law

The first attempt to repeal the Arkansas anti-evolution law failed in 1937, when a proposal to repeal the law died in committee without coming to a vote (Sweeney 1966; Keienburg 1978). In 1959, another attempt to repeal the anti-evolution law emerged when Little Rock was gripped by racial strife. When the public schools were closed, a group including high school student Griffin Smith, Jr.[7] approached

[5]When a prominent atheist (Charles Smith, president of the American Association for the Advancement of Atheism) came to Little Rock to protest the anti-evolution legislation, he was jailed for 26 days. The mayor proclaimed that "No atheist will be permitted to maintain headquarters in Little Rock, Arkansas, if I can prevent it" (Kazan 1966c).

[6]For other examples of the public's reaction to the statute, see footnote 16 of *Epperson v. Arkansas*. That ruling can be found at *http://cns.bu.edu/pub/dorman/epperson_v_arkansas.html*.

[7]Smith's teacher had told him that Arkansas banned her from teaching about Darwin's theory. Smith learned more about the law from his grandfather (a former Chief Justice of the Arkansas Supreme Court) and his father, who was an attorney (Keienburg 1978).

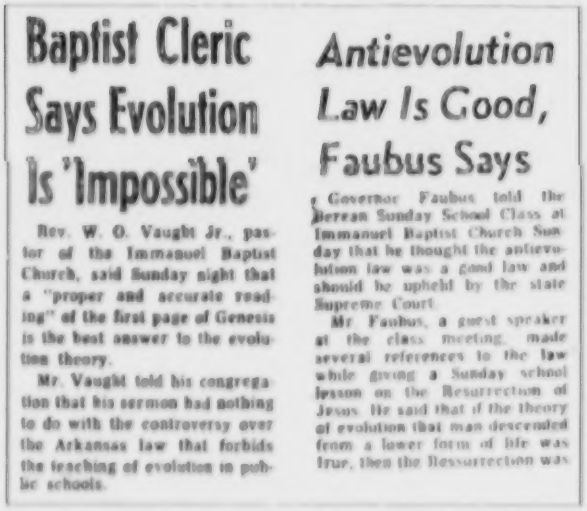
Pulaski County Representative Willie Oates, asking her to try to "have restrictions imposed on teaching in this state lifted" (Keienburg 1978). Oates tried to remedy the situation by introducing a bill (House Bill 418) that would repeal the 1928 ban on teaching evolution and allow students "to study both sides of an issue and decide for themselves what is true in an atmosphere of complete academic freedom" (Keienburg 1978). After being branded an atheist and facing overwhelming opposition to her bill, Oates withdrew the bill, adding that (Keienburg 1978):

> *We must compromise with each other in an effort to reach conclusions that are mutually beneficial . . . The majority of the people in my county do not wish to grant the academic freedom these young people requested. Therefore, Mr. Speaker, I wish to permanently withdraw my H.B. 418—The Evolution Bill.*

In the next election, Oates lost. As she said after her defeat, "The Evolution Bill was a contributing factor to my not being re-elected."[8]

By 1965, the teaching of human evolution in Arkansas had been a crime for almost 40 years. In that year, Representative Nathan Schoenfeld introduced another bill calling for the repeal of the anti-evolution law. Although Schoenfeld's bill failed to pass through committee and was never called for a vote (Susan Epperson, personal papers; Keienburg 1978), it did renew public interest in the topic. Soon after the demise of Schoenfeld's bill, the Arkansas Education Association (AEA, a 17,000-member affiliate of the National Education Association), the Arkansas School Board Association, and the Arkansas Parent Teacher Association spoke out against the anti-evolution law, as did the American Association of University Women (AAUW). Supporters of the law also spoke out. For example, the Central Baptist Association supported the law, and a prominent Baptist preacher declared evolution "impossible" (Baptist cleric says evolution is "impossible," 1965; also see Figure 3.1). The State Association of Missionary Baptist Churches, meeting at the Antioch Baptist Church where Ben Bogard had been a preacher, urged authorities to enforce the law (Baptists seek "monkey law" enforcement, 1965). Governor Faubus told reporters that the 1928 anti-evolution law was still the will of the people, and proclaimed that the Genesis account of creation was "good enough for me" (Tompkins 1966). Faubus (a Baptist who had used armed troops in 1957 to keep black students out of Central High School) supported the 38-year-old anti-evolution law "as a safeguard to keep way-out teachers in line" (Irons 1988; also see Figure 3.1). Amidst this renewal of interest in the anti-evolution law, the AEA began to consider challenging the statute.

[8]Years later, Oates wrote to Epperson, recounting her attempt to repeal the law and offering support.



Baptist Cleric Says Evolution Is 'Impossible'

Rev. W. O. Vaught Jr., pastor of the Immanuel Baptist Church, said Sunday night that a "proper and accurate reading" of the first page of Genesis is the best answer to the evolution theory.

Mr. Vaught told his congregation that his sermon had nothing to do with the controversy over the Arkansas law that forbids the teaching of evolution in public schools.

Antievolution Law Is Good, Faubus Says

Governor Faubus told the Berean Sunday School Class at Immanuel Baptist Church Sunday that he thought the antievolution law was a good law and should be upheld by the state Supreme Court.

Mr. Faubus, a guest speaker at the class meeting, made several references to the law while giving a Sunday school lesson on the Resurrection of Jesus. He said that if the theory of evolution that man descended from a lower form of life was true, then the Ressurrection was

Figure 3.1. Anti-evolution articles such as these appeared regularly in newspapers such as the *Arkansas Gazette* in the weeks surrounding Susan Epperson's first trial.

Finding a Plaintiff

To help them find a plaintiff, the AEA enlisted the help of Virginia Minor, a kindergarten supervisor at Little Rock Central High School. At about the same time, Susan Epperson—a biology teacher at Little Rock's Central High School—noticed an article in the *Arkansas Gazette* about the AAUW's support of academic freedom and stand against the state's anti-evolution law. Before Epperson started teaching at Central High, the official textbook used in tenth-grade biology classes did not include a section about Darwinian theory. But in 1965, administrators at Central High School[9]—in response to a recommendation from the school's biology teachers—adopted *Modern Biology* (Moon, Mann & Otto 1965), whereas evolution had disappeared from earlier editions of *Modern Biology* after Scopes' conviction (Moore 1998b, c), the new edition adopted at Central High School stated that evidence of "changes in plants and animals" over time showed that humans and apes "may have had a common, generalized ancestor in the

[9]Central High School was the infamous site where federal troops were used to enforce desegregation according to the U.S. Supreme Court's *Brown v. Board of Education* decision. Epperson received many letters that linked racism with the teaching of evolution (Susan Epperson, personal letters). The community's division over race affected attitudes about Darwin's theory being taught in the public school. As J.W. Cash (1941) noted, "The anti-evolution organizers were explicitly engaged in attempting to wipe out all new knowledge in the schools. They warned constantly that evolution was certain to breed Communism, it was breaking down Southern morals, destroying the ideal of Southern Womanhood. One of the most stressed notions that went around was that evolution made a Negro as good as a white man, that it threatened White Supremacy."

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remote past" (see Irons 1988).[10] Although these statements were cautious and qualified, they nevertheless clashed with Initiated Act No. 1.[11] Thus, in 1965 Epperson faced a dilemma: She was supposed to use the prescribed textbook, but doing so would be a crime and subject her to being fired. Not surprisingly, some teachers avoided this dilemma by skipping the chapters on evolution; to stay "in line," some schools even omitted biology altogether (de Camp 1969).

Susan Epperson was a perfect plaintiff for the AEA: She was a public school teacher who had been born, raised and educated in Arkansas; she had attended a small church-affiliated college in the state; and Epperson's husband, Jon, was in the Strategic Air Command at the Little Rock Air Force Base, thereby neutralizing charges of "outside agitation" that had surfaced during the racial confrontations in Little Rock (as well as during the Scopes trial; see Moore 1998a).[12] Finally, Epperson was also a devout Christian who was active in the Second Presbyterian Church in Little Rock.

In November 1965, Epperson, Minor, Eugene R. Warren (attorney for the AEA), and Forrest Rozzell (Executive Secretary of the AEA) met in Minor's kindergarten classroom to discuss the 1928 anti-evolution law.[13] The group sat in tiny child-sized chairs around a tiny table. Epperson was presented with a complaint drafted by the AEA. She later recalled:

> *I was aware of the possible negative results of the case. But when a law is wrong you should try to do something about it. The brief was written for me—it was all there expressing in legal terms everything that I felt. It was really nothing but cowardice that would have kept me from signing the complaint for the suit.*

Epperson agreed to test the law "because of my concept of my responsibilities both as a teacher of biology and as an American citizen" (for more about Epperson, see Appendix 5). Thus, the AEA, with Epperson as the nominal plaintiff, sought a declaration that the law was unconstitutional because it violated two clauses of the First Amendment (i.e., the clauses that protected her free speech and that barred the government from establishing religion). Epperson also charged that the law impeded the "free communication of thoughts and opinions" protected by the Arkansas Constitution (Irons 1988), and sought to enjoin the administrators of the school from firing her for breaking the law.

On December 4, 1965, after teachers had used the offending textbook but before they had reached the illegal chapter, the AEA Board of Directors authorized "using the judicial process for determining the constitutionality of the [anti-evolution] law" (Larson 1989). Two days later, Warren filed the complaint, asked for a declaratory judgment[14] of the anti-evolution law, and requested relief from cancellation of contract and dismissal by the school board (Figure 3.2). The Greater Little Rock Presbyterian Ministers' Association joined Epperson's call for the repeal of the anti-evolution law. Hubert Blanchard, Jr., Assistant Executive Secretary of the AEA and a parent who wanted his two sons to "be informed of all scientific theories and hypotheses," supported Epperson's action as an intervenor. For the first time since the Scopes trial in 1925, there would be a lawsuit to challenge an anti-evolution law.

Taking Sides

When news of Epperson's lawsuit became public, people began taking sides. Arnold Grobman (President of the National Association of Biology Teachers and a former director of the Biological Sciences Curriculum Study) offered Epperson encouragement and help. The *Arkansas Gazette* praised Epperson's work on behalf of teachers for intellectual honesty and academic freedom (A try, finally, to test the evolution law, 1965), and in April of 1966 the Little Rock branch of the AAUW commended Epperson "for her courage and intellectual integrity." The Little Rock Central High School *Tiger* noted that "Mrs. Epperson has shown admirable courage in filing her law suit" (Maintaining one's ideas, 1965).

Not surprisingly, fundamentalists opposed Epperson. The Baptist Bible Fellowship announced that (de Camp 1968):

> *We firmly believe and accept the Genesis account of creation; that man was created in the image of God by the direct and immediate act of God without the process of evolution.*

Concerned citizens sent Epperson an assortment of religious texts, including one written by Willard Henning of Bryan College (Dayton, Tennessee) titled "How Valid is the Theory of Evolution?" A letter from the Creation Research Society told Epperson that "evolution is on its way out" and asked:

> *Can't you delay your action against [the law] while you study the facts?*

Others attacked Epperson; she was labeled an atheist and depicted as a monkey. A letter addressed to "The Monkey Teacher" told Epperson that:

[10] *Modern Biology* was the best-selling biology textbook for more than 15 years; at one point, more than half of all biology teachers used *Modern Biology* (Grabiner & Miller 1974).

[11] In fact, Act No. 1 had already been violated, for the Central High School library was "well-stocked with books of and by Charles Darwin," including *Origin* (Teacher's challenge, 1965).

[12] The ACLU, which had financed John Scopes' test of the anti-evolution law in Tennessee (Moore 1998a), offered legal assistance to Epperson, but her attorney declined because of negative connotations that the entrance of the ACLU would produce.

[13] Like Epperson, Rozzell was a graduate of The College of the Ozarks and had studied biology under Epperson's father.

[14] A declaratory judgment would put the law, not Epperson, on trial.

Teacher at Central High Challenges Constitutionality of Evolution Law

Mrs. Susan Epperson, a biology teacher at Central High School, filed a lawsuit Monday in Chancery Court asking that the law prohibiting the teaching of the theory of evolution in Arkansas be ruled unconstitutional.

Her petition said the law conflicted with the right of freedom of speech as guaranteed by Amendments 1 and 14 of the Constitution of the United States, and by Article II, section 6 of the state constitution, which says, "The free communication of thoughts and opinions is one of the invaluable rights of man; and all persons may freely write and public their sentiments on all subjects, being responsible for the abuse of such right."

It also said that the advocates of the anti-evolution law tried to justify it on the ground that the Darwiian theory of evolution was a religious theory contrary to Christianity. The petition said this position was erroneous but that if it was true then the law "constitutes action by the state to enter the field of religion" which also is prohibited by the state and federal Constitutions.

Mrs. Epperson, 24, of 1613 Battery Street, said she considered it her professional duty and responsibility to explain and discusss with her students all scientific theories so htat they could be enlightened. To do so would make her a law violator, she said.

The anti-evolution law, Initiated Act 1 of 1928, was adopted by Arkansas voters on October 6, 1928, by 108,991 votes for to 63,406 against and became effective immediately. It was initiated in the aftermath of the famous Scopes "monkey trial" two years earlier at Dayton, Tenn., when John Scopes, a school teacher, was convicted of violating a similar law in Tennesssee.

THE LAW HAS BECOME A CONTROVERSIAL SUBJECT AGAIN IN RECENT YEARS. Forrest Rozzell, executive secretary of the Arkansas Education Association, has

(See LAW on Page 2A.)

Staff Photo

MRS. SUSAN EPPERSON

Figure 3.2. Susan Epperson's challenge to the Arkansas anti-evolution law was the first challenge to an anti-evolution law since the trial of John Scopes in 1925. This article appeared on the front page of the 7 December 1965 issue of the *Arkansas Gazette*.

> *There is a striking resemblance between you and a monkey. I would advise you to go ahead and teach it. You are living proof of it.*

Charlotte Blair told Epperson that:

> *I am sure you are not aware of the Havoc* [sic] *you are causing among the young with your Darwin theory, teaching. As United States* [sic] *is mostly Christian, this is an affront to Christians, and in favor of the atheists, it is about time that Christians rise up and demand recognition for their beliefs. The Bible reading was removed as an affront to atheists, well this Darwin theory is an affront to the Christian, and we are footing the bills for the nation. Even the Jew would object to being descended from a monkey, as it sure would not fit into their religious views. Not knowing you, it could be true, in your case, but why brag about it, you are proving it.*

Concerned Christians also told Epperson that:

> *If I had a daughter like you, I would of asked God to of let you died* [sic] *while young.*

> *Go on, teach evolution and may God have mercy on your soul. We will live to see the day when . . . others will [go] to hell and you will go there also.*

Although Warren (a friend of Arkansas Attorney General Bruce Bennett) had warned against making Epperson's trial a "Barnum and Bailey circus" and had said that he didn't want "the carnival atmosphere that went on in Tennessee" (Arkansas monkey battle, 1966; Bentley 1966), many people tried to sensationalize the trial. For example, on the Sunday before the trial opened, a popular Baptist preacher told his congregation that "the acceptance of organic evolution means the death of Christianity" (Kazan 1966a) and that "the U.S. Supreme Court is now in the process of reversing all previous decisions that recognized our Nation as a Christian Nation" (Trial of 1966, 1966). Governor Orval Faubus, delivering a lesson about the resurrection of Jesus, told his Sunday School class that the law was a good law and declared that he "was not ready to repeal the Bible" (Antievolution law is good, 1966).

The trial's principals also got involved in the pretrial sparring. Arkansas Attorney General Bennett claimed that teaching evolution would make it possible for "crackpots" to teach the "God is Dead" theory, the theory that "man came from a gorilla," and the "Ham and Eggs Theory of California" (Bennett did not explain the "Ham and Eggs Theory," Kazan 1966b). Bennett also announced that evolution was an atheistic doctrine, that Epperson wanted to make atheists of her students, and that he wanted to bring in preachers and other witnesses to discredit the theory of evolution (Keienburg 1978). On the day before the trial, Bennett continued his tirade, claiming that Epperson "wants . . . to advance an atheistic doctrine" (Arkansas 'Monkey' trial, 1966). Epperson, meanwhile, released her own statement:

> *I am a teacher by profession. I chose to become a teacher because I believe that teaching is the most important profession to which a person can dedicate his talents and energies. I pursued an education course in college to become a science teacher as competent as my capabilities will permit. I received a bachelor's degree from the College of the Ozarks*

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and a Master of Science degree from the University of Illinois.

My mother is a public school librarian and my father has been a professor of biology for almost half a century. They are both dedicated Christians who see no conflict between their belief in God and the scientific search for truth. I share this belief.

As a new teacher (this is my second year), and, as a native Arkansan, Arkansas' anti-evolution law has disturbed me more than a little.

I do not try to teach my students what to think. I try to teach them how to think, how to make sound judgments about the various relevant alternatives. In doing this, it is my responsibility to expose my students to and encourage them to seek after as much of the accumulated scientific knowledge and theories as possible. Rational knowledge, as accurate and balanced as humanly possible at any given time, is essential to the making of sound value judgments.

When [I was asked] to become the plaintiff in this test suit I agreed to do so because of my concept of my responsibilities both as a teacher of biology and as an American citizen. This law, prohibiting any teacher from discussing in any way the Darwinian theory of evolution, compels me either to neglect my responsibility as a teacher or to violate my responsibility as a citizen. As a responsible biology teacher, it is my duty to discuss with my students and to explain to them various scientific theories and hypotheses in order that they may be as educated and enlightened as possible about matters pertaining to science, including the theories of Darwin as set forth in "On the Origin of Species" and in "The Descent of Man." However, when I do this, I become an irresponsible citizen—a law violator—a criminal subject to fine and dismissal from my job. On the other hand, if I obey the law, I neglect the obligations of a responsible teacher of biology. This is the sure path to the perpetuation of ignorance, prejudice and bigotry.

The only recourse available to me which is consistent with my concept of my responsibilities as a teacher and citizen is this test suit. It is my fervent hope that this suit will resolve this dilemma not only for me but also for all other Arkansas teachers.

As the trial approached, comparisons to the Scopes trial became increasingly frequent; there were even some hints that history was about to repeat itself (Keienburg 1978).

The Trial

Epperson's complaint was assigned to Chancellor Murray O. Reed of the state's Chancery Court for a hearing and decision without a jury. The trial occurred on 1 April 1966[15] before a throng of more than 100 that filled the third-floor courtroom and halls (Reed had banned photographers, as well as radio and television coverage). Reed, who tripled the number of bailiffs in the courtroom, studied the ruling of Tennessee in the Scopes trial but refused to follow Tennessee's example. Instead, Reed refused to allow questions about the personal beliefs of witnesses, and would not hear arguments about the validity of evolution or its relative merits when compared to creationism. He also limited the case to constitutional issues (e.g., Epperson's freedom of speech). Warren hardly questioned the state's four witnesses. He questioned Epperson for only about 10 minutes, during which Epperson focused on the central issue:

I brought this lawsuit because I have a textbook which includes the theory about the origin or the descent or the ascent of man from a lower form of animals. This seemed to be a widely accepted theory and I feel it is my responsibility to acquaint my students with it.

Attorney General Bennett, a segregationist who defended the anti-evolution law, took personal charge of Epperson's trial (as he had in the 1957 trial of Daisy Bates for refusing to give Bennett the NAACP's membership list; see Larson 1989). Bennett cross-examined Epperson for almost an hour, after which he argued that Arkansas, like most employers, has:

certain things about which they command their employees to keep silent during their hours of employment.

Bennett then invoked the majoritarianism legacy of William Jennings Bryan by reminding the court that:

The people have spoken on this subject and have shown by an overwhelming vote that they do not want their children taught the theory of evolution in the public schools. Are the rights and wishes of the majority to be ignored in order that Mrs. Epperson's desire to teach evolution may be gratified? . . . Have the people no right or power, by majority vote, to forbid the teaching of a theory in which they do not believe, to which they violently object, which has no basis in fact, and which is detrimental to the spiritual and mental well-being of their children? If not, then this is no longer a government of the people, by the people, and for the people.

Bennett reminded the Court of the Scopes case and its legacy, as well as the fact that two of Arkansas' neighboring states had similar statutes: Tennessee (Tennessee Code Ann. 49-1922, enacted 1925; see Moore 1998a) and Mississippi (Miss. Code Ann. 6798, 6799, enacted 1926; see Moore 1998b).[16] He then added that:

These two states evidently regard the statutes as being reasonable. The only challenge to either of these was the Scopes case, and there the Tennessee statute was held to be valid. The Scopes decision was in 1927; since then the evolution statutes have gone unchallenged.

Bennett also attacked Epperson:

Mrs. Epperson seeks to foist the beliefs of Darwin which she advocates upon a captive audience . . . she insists that it is her right under the freedom of speech provision of the Constitution to indoctrinate our children with this unproven theory . . .

[15]The April Fools' date was not an accident. Chancellor Reed, who had made no secret of his contempt for the anti-evolution law, scheduled the trial for one day instead of the usual two weeks allotted for most other cases (Larson 1989).

[16]Tennessee's Butler Law would be repealed in 1967. On 21 December 1970, the Mississippi Supreme Court blamed *Epperson v. Arkansas* for having to unanimously declare the Mississippi anti-evolution statute—America's last anti-evolution law—"void and of no effect" (Larson 1989).

and described the case as a choice of (Memorandum brief, 1966):

> *whether we succumb to the atheistic, materialistic concept which is attempting to conquer the world or whether we provide a climate in which our children will be encouraged to retain the spiritual, moral, and human values which our forefathers, in drafting our Constitution, tried so steadfastly to protect.*

The trial—billed by *The New York Times* as the "New 'Scopes Trial'" (New "Scopes trial" opens in Arkansas, 1966)—was attended by ministers, seminary students, civil rights workers, and interested spectators. T.F. Guthrie, superintendent of schools at Dayton, TN, attended at his own expense and volunteered as a state witness (Defies ban on teaching evolution, 1966). Although there was seating for only 60, more than 100 people were in the courtroom, and spectators stood ten-deep in doorways to hear testimony. Twice during the proceedings Chancellor Reed threatened to clear the court when spectators laughed and became noisy (e.g., when Bennett asked "What do we care about some fossil found in Africa?"; see Defies ban on teaching evolution, 1966). Like Bryan before him, Bennett played to the courtroom with swagger, and claimed that Epperson's teaching would "becloud" the minds of her students and that her students' minds would be "warped by anti-religious propaganda." Reed barred Bennett's witnesses that were to testify on behalf of the law (and, simultaneously, question and denounce evolution), stating that the issue at hand was a constitutional, not a religious or scientific, issue. Bennett, searching for an opening to bring in his parade of witnesses, asked a variety of unusual questions. For example:

Bennett:	*The protozoa is an infinite little cell, isn't it?*
Epperson:	*I believe it is finite.*
Bennett:	*Do you know of a theory that man evolved from algae?*
Epperson:	*No sir.*
Bennett:	*From seaweed?*
Epperson:	*Seaweed? No, not as a strict theory.*

Despite his bravado and self-confidence, Bennett was poorly prepared, ignorant of science, and out-performed by Warren (one account described Bennett as a "silver-haired, but scarcely silver-tongued counterpart of William Jennings Bryan"). Reed sustained all of Warren's 63 objections. Whereas Scopes' trial more than 40 years earlier had dragged on for two weeks, Epperson's trial involved only six witnesses and ended after only two hours (Irons 1988). Bennett rested the state's case just 30 minutes into the afternoon session. Warren then rested his case, and Reed—asking for additional briefs—took the case under advisement.

Although Reed did not reject "creation" in his nine-page *per curiam* opinion (which was issued two months later), he did reject the law forbidding the teaching of evolution:

> *This Court is of the opinion that a chapter in a biology book, adopted by the school administrative authorities, stating that a specific theory has been advanced by an individual that man ascended or descended from a lower form of animal life, does not constitute such a hazard to the safety, health and morals of the community that the constitutional freedoms may justifiably be suppressed by the state.*

Reed, citing *Scopes v. State of Tennessee* and noting that "this Court is not unmindful of the public interest in this case," ruled that the Arkansas statute violated the Fourteenth Amendment because it was arbitrary and vague, thereby making interpretation difficult. Reed went on to add that (Memorandum opinion, 1966):

> *Act No. 1 . . . tends to hinder the quest for knowledge, restrict the freedom to learn, and restrain the freedom to teach.*

Reed's handling of the case was praised by the press and individuals alike (A dignified trial of law on evolution, 1966). But many people—especially those hoping for another Scopes fiasco—were disappointed in the trial. Headlines on 2 April 1966 made it clear that Epperson's trial lacked the drama of the Scopes trial:

> *Washington Daily News*: Court Drama Lacking: 2d Evolution Trial is a Drag
> *Oakland Tribune*: Evolution Trial Fails to Impress
> *Washington Post*: '66 Evolution Case Is Only a Shadow of Famous Scopes Monkey Trial
> *Shreveport Times*: 'Monkey Trial' Fizzles on Lack of Sensation
> *Los Angeles Times*: 'Monkey Trial' Rerun Stripped of Drama
> *New York Herald Tribune*: Arkansas Evolution Trial Lacks 1925 Scopes Drama

Although Epperson had won, Warren knew that to get a definitive decision, Epperson's case had to get to the U.S. Supreme Court. That meant that the state would need to appeal Reed's decision to the Arkansas Supreme Court, and that Epperson must lose that appeal.

Soon after Reed's decision, Tennessee—a state that had become known as the "Monkey State" (The *Press-Scimitar* blitzes the Tennessee anti-evolution law, 1967; Monkey law bill may be decided, 1967)—repealed its anti-evolution law after a Jacksboro science teacher (who had been fired for teaching evolution) challenged the law in 1967 (Figure 3.3).[17] John

[17]The Butler Law was repealed after a controversy that erupted when Gary L. Scott, a science teacher in the rural Campbell County School System, was fired for teaching evolution and for allegedly telling students that the Bible is "a bunch of fairy tales." Scott challenged the Butler Law in Federal Court on 15 May 1967. Soon thereafter, the Butler Law was voted down by a two-to-one majority in the Tennessee House, but a 16-16 stalemate in the Senate—punctuated by many professions of faith—preserved the *status quo*. When Scott's attorneys offered to dismiss the lawsuit

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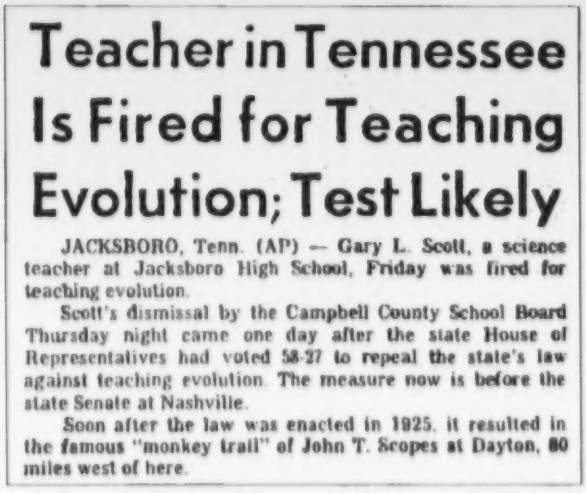

Teacher in Tennessee Is Fired for Teaching Evolution; Test Likely

JACKSBORO, Tenn. (AP) — Gary L. Scott, a science teacher at Jacksboro High School, Friday was fired for teaching evolution.

Scott's dismissal by the Campbell County School Board Thursday night came one day after the state House of Representatives had voted 58-27 to repeal the state's law against teaching evolution. The measure now is before the state Senate at Nashville.

Soon after the law was enacted in 1925, it resulted in the famous "monkey trail" of John T. Scopes at Dayton, 80 miles west of here.

Figure 3.3. The firing of Jacksboro, Tennessee science teacher Gary Scott ultimately led to the repeal of Tennessee's Butler Law in 1967. When Scott offered to dismiss his lawsuit, the Tennessee Senate voted to repeal the law. Scott then dismissed his lawsuit and was reinstated.

Scopes, who had just published his memoirs (Scopes & Presley 1967), noted that (House act fails to stir Scopes, 1967):

> *It's been a long fight for the people of Tennessee. I think the people there realized that it was a bad law and would have to be repealed sooner or later. I suppose the time had come.*

But the appeal of the Epperson decision would change everything.

Appealing the Epperson Decision

As Bennett had promised from the outset, the Arkansas' Attorney General's Office appealed Reed's ruling to the Arkansas Supreme Court. The appeal included no oral arguments. On 5 June 1967 (just before adjourning for the summer break) the Arkansas Supreme Court issued a bizarre, unsigned, two-sentence *per curiam* ruling. Unlike most decisions by the Court, this decision was not written by any one justice and did not include the usual published opinion (five of the seven judges wrote opinions, but "some were unhappy with the way some of [the opinions] read"; Keienburg 1978). The first sentence of the decision ruled that the state law "is a valid exercise of the state's power to specify the curriculum in its public schools." The second sentence puzzled everyone:

> *The court expresses no opinion on the question whether the Act prohibits any explanation of the theory of evolution or merely prohibits teaching that the theory is true.*[18]

Although the 6-1 decision did not address whether Epperson could assign "the evolution chapter" (i.e., Chapter 39, "The History of Man") of *Modern Biology* to her students, the appeal did reverse the Chancery Court's ruling, thereby sustaining the statute as an exercise of the state's power to specify the curriculum in public schools. On 26 July 1967, the Arkansas Supreme Court refused to reconsider its decision upholding the prohibition of teaching evolution in public schools.[19] After being legal for just over a year, the teaching of human evolution was again a crime in Arkansas. However, four decades after the Scopes fiasco, there was a case—not in Tennessee, but in Arkansas—to appeal to the U.S. Supreme Court.

The Ban on Evolution Reaches the U.S. Supreme Court

Early in 1968, the U.S. Supreme Court agreed to hear *Epperson v. Arkansas*, despite the fact that there was no record of any prosecutions under the statute and that the statute was "more of a curiosity than a fact of life" in Arkansas. Epperson's case, like all cases involving evolution since Scopes' trial (Moore 1999 and references therein), was viewed in light of Scopes' trial (e.g., a front-page article in *The New York Times* described Epperson's case as "the nation's second 'monkey trial'"; Graham 1968).

On 16 October 1968, Eugene Warren spoke for only 10 minutes of the half-hour allotted to him by the Supreme Court. In his presentation, Warren used the Arkansas Supreme Court decision to attack the vagueness of the Arkansas law; he ignored the free-speech and establishment of religious issues that had been addressed in his brief.[20] According to Warren, teachers were so confused and frightened that "biology is not even taught" in many Arkansas schools (Irons 1988). The state's argument was made by Don Langston, a young assistant to the new Arkansas Attorney General, Joe Purcell (Bennett had been sent back to private practice by Arkansas' voters in 1966). Langston disliked his task; he complained that he had inherited the case and that the Arkansas Supreme Court had not provided any basis for its decision. After apologetically arguing that the law was a "neutrality act" which equally proscribed Darwin's ideas and "opposing theories" of human origins, Langston

if the state Senate repealed the Butler Law, Senators voted to strike the law. Scott then dismissed his lawsuit and was reinstated (Teacher in Tennessee is fired, 1966; Figure 3.3).

[18]This sentence (and its non-final "decision") was meant to deny the U.S. Supreme Court the jurisdiction of the case (i.e., only a final decision could be appealed; Keienburg 1978).

[19]Governor Faubus attended one of the Supreme Court sessions and intimidated the members of the Court (Keienburg 1978). Even Justice George Smith (whose father Hay Watson Smith had opposed passage of the original legislation in 1928; see above) went along with the majority, saying only that "You will have to be satisfied with the decision in the record."

[20]The written brief alleged that appellants were denied freedom of speech and freedom to learn, equal protection of the law, due process of law, and religious freedom (see Keienburg 1978).

admitted that the law did not prohibit "the literal reading of Genesis" in biology classes (Irons 1988). Langston argued that the anti-evolution law was a valid use of the state's power to govern the curriculum and instruction in public schools, adding that:

> *If Mrs. Epperson would tell her students that "Here is Darwin's Theory, that man ascended or descended from a lower form of being" then I think she would be under this statute liable for prosecution.*

Although Langston would not concede that the law was invalid (to which U.S. Supreme Court Justice Abe Fortas replied, "It might not be too late, you know"), he smiled when Justice Thurgood Marshall asked whether, since the Arkansas Supreme Court disposed of the case in two sentences, he would "object to us disposing of [the case] in one sentence" (Irons 1988). At another point, Langston complained that Arkansas "didn't file a written opinion with reasoning." When a justice responded that "Maybe they couldn't," Langston responded "I have heard rumors to that effect."

Langston knew that he would lose the case. One month later (on 12 November 1968), the Supreme Court proved him right (Figure 3.4). Clearly influenced by the legacy of the Scopes' trial,[21] the Supreme Court ruled unanimously that banning the teaching of evolution violated the Due Process Clause of the Fourteenth Amendment and the Establishment Clause of the First Amendment to the Constitution (*Epperson v. Arkansas*; Levy 1986).[22] Specifically, the Court ruled that the Arkansas law was too vague to enforce, attempted to establish a religious position in a public school, reflected religious dogma, and attempted to bar the teaching of evolution because evolution contradicted the religious beliefs of people who favored a literal biblical explanation for the origin of humans:[23]

> *Arkansas has sought to prevent its teachers from discussing the theory of evolution because it is contrary to the belief of some that the Book of Genesis must be the exclusive source of doctrine as to the origin of man. It is clear that fundamentalist sectarian conviction was and is the law's reason for existence . . . Arkansas did not seek to excise from the curricula of its schools and universities all discussion of the origin of man. The law's effort was confined to an attempt to blot out a particular theory because of its supposed conflict with the Biblical account . . . The overriding fact is that Arkansas' law selects from the body of knowledge a particular segment which it proscribes for the sole reason that it is deemed to conflict with a particular religious doctrine; that is, with a particular interpretation of the Book of Genesis by a particular religious group . . . [Government] may not be hostile to any religion or to the advocacy of no-religion; and it may not aid, foster, or promote one religion or religious theory against another or even against the militant opposite. The First Amendment mandates governmental neutrality between religion and religion, and between religion and nonreligion.*

Finally, more than three years after it started, Susan Epperson's case was over.

Many applauded the Supreme Court's decision; for example, the *Arkansas Gazette* told its readers that the U.S. Supreme Court had provided "an overdue rescue from a law of ignorance" (An overdue rescue, 1968).[24] As people in Dayton, Tennessee reiterated their claim that they would "convict Scopes still" (Dayton says it'd convict Scopes still, 1968),[25] John Scopes—by this time 68 years old—emerged from his retirement in Louisiana to speak out in support of Epperson (A Darwinism ban in Arkansas ends, 1968; also see Figure 3.5):

> *This is what I've been working for all along . . . I'm very happy about the decision. I thought all along—ever since 1925—that the law was unconstitutional.*

Scopes had won his long-overdue victory.[26] However, he also sounded a note of caution (Irons 1988; Larson 1989):

> *The fight will go on with other actors and other plays.*

Scopes was right. It wasn't long before Darwin's ideas were back in court.

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[21]U.S. Supreme Court Justice Abe Fortas, who had followed the Scopes trial as a 15-year-old student in Memphis, Tennessee, volunteered to write the Court's majority opinion. In that opinion, Fortas repeatedly cited "the celebrated Scopes case" and scornfully linked both the Tennessee and Arkansas anti-evolution laws to "the upsurge of 'fundamentalist' fervor of the twenties" (Irons 1988). Interestingly, Fortas' opinion in *Epperson v. Arkansas* would later be used by creationists to argue for "equal time" in the classroom for their ideas (see Moore 1999).

[22]By 1922 the U.S. Supreme Court had used the Due Process Clause to protect academic freedom by striking down a Nebraska law making it a crime to teach any subject in any language other than English to students who had not passed the eighth grade. The First Amendment mandates governmental neutrality between religion and religion, and between religion and nonreligion. The Establishment Clause of the First Amendment states that "Congress shall make no law respecting an establishment of religion." For a discussion of the First Amendment and religion, see Levy (1986).

[23]Justice Hugo Black, who issued a separate opinion, questioned the truth of evolution and did not believe that the anti-evolution laws had a religious purpose. Black's opinion was influenced by his background (e.g., Black was raised by devout Baptists and had been supported in earlier elections by the Ku Klux Klan; see Larson 1989).

[24]*Epperson v. Arkansas* has been applied in a variety of court decisions, including those involving "release time" from public school for religious training (*Smith v. Smith*, 391 FS 443, 1975), censorship of textbooks (*Daniel v. Waters*, 515 F2d 485, 1975), Bible readings in public schools (*Meltzer v. Board of Public Instruction of Orange County, Florida*, 548 F2d 559, 1977), sex education (*Cornwell v. State Board of Education*, 341 FS 340, 1969), exhaustion of administrative remedies (*Lopez v. Williams*, 373 FS 1279, 1973), the Establishment Clause of the First Amendment (*Meek v. Pittenger*, 421 US 349, 1975), First Amendment rights for students (*Tinker v. Des Moines*, 89 S.Ct. 733, 736, 1969), and the academic freedom of teachers (*Parducci v. Rutland*, 316 FS 352, 1970).

[25]In 1968, Mrs. J.D. Goodrich, widow of a juror in the Scopes trial, repeated the belief from more than 40 years before: "William Jennings Bryan was a wonderful Christian, but Clarence Darrow was an agent of the devil and an infidel" (Dayton says it'd convict Scopes still, 1968).

[26]Scopes, recalling how his trial disrupted his life, said that he hoped Epperson's efforts would "not disturb her life too much" (Defies ban on teaching evolution, 1966).

azette.

Arkansas Forecast

Fair and warmer Wednesday with increasing cloudiness and a chance of showers Thursday.

(Weather Map on Page 9B.)

3, 1968. 38 Pages ☆ ☆ 10 Cents

Arkansas Law On Evolution Struck Down

Victor in the Evolution Case

Mrs. Susan Epperson is shown with the father, T. L. Smith, during the trial two years ago. Like his daughter he also is a teacher of biology.

It Violates Amendments, Justices Say

By ED JOHNSON

Gazette Washington Bureau
734 National Press Building

WASHINGTON — The United States Supreme Court struck down Arkansas's antievolution law Tuesday on the ground that it tears down in the public school system the wall between church and state guaranteed by the United States Constitution.

The decision means that the public school teachers in the state are free to teach Darwin's theory that mankind evolved from another animal or animals, without fear of criminal prosecution.

The "monkey law" has been on the Arkansas books since

Figure 3.4. This headline, which appeared on page 1 of the 13 November 1968 issue of the *Arkansas Gazette*, announced that it was unconstitutional to ban the teaching of evolution in public schools. Whereas the boundary for teachers' rights had previously followed the "employer-employee" model of *State of Tennessee v. John Scopes*, *Epperson v. Arkansas* established a new standard: Although states have the right to control public schools, this right doesn't allow states to violate the constitutional guarantees of teachers and students. *Epperson v. Arkansas* emphasized the public benefits of granting intellectual freedom to teachers and students.

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Figure 3.5. Soon after the U.S. Supreme Court announced its *Epperson v. Arkansas* decision that overturned the ban on teaching evolution, John Scopes spoke out in support of Epperson. This photo shows Scopes and Epperson discussing their historic court cases on 6 January 1969 in Shreveport, Louisiana.

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You don't protect any of your individual liberties by lying down and going to sleep.
—John Scopes, 1968

Descended from apes! My dear, let us hope it is not so; but if it is, let us hope that it does not become generally known.
—Wife of the Bishop of Worcester

4

If We're Going To Teach Evolution...

The Aftermath of *Epperson v. Arkansas*

In 1968, *Epperson v. Arkansas* legalized the teaching of evolution in Arkansas, ruled that laws banning the teaching of evolution were unconstitutional, and made it unconstitutional to ban the instruction of one theory and not another. That is, *Epperson v. Arkansas* outlawed attempts to prevent public school teachers from discussing evolution, and announced that evolution is not religion (Moore 1998c, Levy 1986). Subsequent court rulings have upheld the right of a school district to require a teacher to teach evolution and not creationism. For example:

> In *Webster v. New Lenox School District #122* (917 F.2d 1004, 1990), which relied heavily on *Edwards v. Aguillard* (Moore 1999a), the Seventh Circuit Court of Appeals declared that 1) a teacher does not have a First Amendment right to teach creationism in a public school, and 2) a school district may ban a teacher from teaching creationism (i.e., the teaching of creationism violates the First Amendment).
>
> In *John E. Peloza v. Capistrano Unified School District* (1994, 37 F. 3d 517), the Ninth Circuit Court of Appeals declared that because evolution is not a religion, requiring an instructor to teach evolution does not violate the Establishment Clause of the U.S. Constitution.[1] That is, a teacher's First Amendment right to religious freedom is not violated by a school district's requirement that evolution be taught in biology classes.

Epperson v. Arkansas—the first legal challenge to an anti-evolution law since the Scopes trial in 1925—was a death knell for other anti-evolution laws. For example, the legal drive to repeal the Mississippi anti-evolution law began in 1969 when a citizen of Jackson filed suit in state court complaining that the law denied her daughter's freedom to learn and violated the Establishment Clause of the Constitution. Although some legislators opposed the repeal (one legislator urged his colleagues "to hold the line as a Christian state"), the Mississippi Supreme Court accepted the inevitable: On 21 December 1970, the Mississippi Supreme Court blamed *Epperson v. Arkansas* for unanimously declaring its anti-evolution statute—the nation's last—to be "void and of no effect."

Despite its tremendous impact, *Epperson v. Arkansas* left several important issues unresolved. For example, *Epperson v. Arkansas* did not address the legitimacy of what would come to be known as "creation science," nor did it address possible restrictions on, the nature of, or the constitutionality of teaching creationism. Nevertheless, *Epperson v. Arkansas* outraged conservative Christians and galvanized them into action (Eve & Harrold 1991). Feeling vulnerable, threatened by the BSCS-driven return of evolution to textbooks and the curriculum (Moore 1998b, d), and convinced that their beliefs were not being protected, creationists turned to the courts for relief, as had leaders of earlier social movements. There, creationists became involved in a variety of legal and political skirmishes:

> 1970 witnessed the first lawsuit initiated by creationists. In that case, the mother of Rita Wright sued the Houston Independent School District, claiming that the schools had violated her daughter's constitutional rights by teaching evolution "without critical analysis and without reference to other theories which purport to explain the origin of the human species." Wright claimed that the schools' actions endorsed a "religion of secularism" that implied that beliefs in creationism are wrong, thereby inhibiting her daughter's free exercise of religion. Wright's suit (*Wright v. Houston Independent School District*; 366 F. Supp. 1208, 1208–09, S.D. Tex. 1972) was dismissed before reaching trial when Judge Woodrow Seals ruled that the free exercise of religion was not accompanied by a right to be insulated from scientific findings incompatible with one's beliefs.
>
> > *Teachers of science in the public schools should not be expected to avoid the discussion of every scientific issue on which some religions claim expertise.*
>
> The *Wright* decision made it clear that scientific findings can be taught, even if those findings are offensive. A federal appeals court issued an unsigned opinion a year later that backed Seals' decision. Subsequent cases to restrict the teaching of evolution were dismissed by repeated reaffirmation of the *Wright* decision.
>
> In 1969, the California Board of Education was reviewing a draft of *The Scientific Framework for California*

[1] For more about these cases, see *http://natcenscied.org/voicont.htm#legal*.

Schools, a set of curriculum guidelines for its public schools prepared by a committee of scientists and teachers. *Framework* contained two paragraphs about evolution. Vernon Grose, a Pentecostal untrained in biology and who claimed that his "citizenship is in heaven," was outraged by the paragraphs about evolution. Claiming that he "felt something like Jesus did when he overthrew the tables and the money changers in the temple," Grose announced that the evolutionary bias of *Framework* was a threat to "our national heritage." He sent a 13-page memo to the Board of Education, after which the Board included a formal recommendation for the teaching of creationism in California's public schools. The scientists who advised the Board resigned, and various groups (including one consisting of 19 Nobel Laureates) condemned the creationists' ignorance of science. Nevertheless, publishers quickly changed their books to include creationism; one proposed replacing the description of Leaky's archeological discoveries with a reproduction of Michelangelo's Sistine Chapel painting of the Creation and a drawing of Moses. Another publisher produced a book claiming that science says nothing about who made the world and why; one chapter even included an investigation of the biblical account of creation. The Committee screened many books, changing "evolved" to "appeared," deleting words such as "ancestors" and "descendants," and adding qualifiers such as "according to one point of view" and "it is believed, in the theory of evolution" (see discussion in Nelkin 1982). Many scientists were relieved that the changes were not more drastic. By 1974, a new method of evaluating educational materials resulted in the elimination of creationist books, and in May, 1974 the board reversed its earlier decision to include creationism in textbooks (Nelkin 1982). Frustrated and bitter that they could not change the guidelines, the creationists repeated William Jennings Bryan's majoritarian arguments (Kelly Segraves, as cited in Nelkin 1982):

> *The public schools are not controlled by the public nor does the public have any say in the educational process. It seems that the public through taxes simply pays for that which they do not want.*

In 1970, prompted by the California State Board of Education's inclusion of creation and evolution as historical scientific theories, the Creation Science Research Center was formed by Nell Segraves, Kelly Segraves, and Henry Morris. Soon thereafter, Morris' Creation Research Society (with the help of Zondervan, a Christian publisher) produced a high school biology textbook in 1970 titled *Biology: A Search for Order in Complexity*. All 10,000 copies of the first printing sold within a year, after which the publisher produced another 25,000 copies. That book, which promoted the biblical story of creation and declared that "There is no way to support the doctrine of evolution," was offered to teachers interested in a "balanced treatment" of studies of origins. The use of *Biology: A Search for Order in Complexity* in public schools was subsequently declared unconstitutional because it violated the separation of church and state (see discussion in Moore 1998d). Nevertheless, the royalties from sales of the book—$6,500 during the first two years alone—enabled the Creation Research Society to continue its research on what became "creation science" (Numbers 1992).

In 1972, largely in response to events in California, the National Academy of Sciences, the National Science Teachers Association, and the National Association of Biology Teachers began campaigns opposing requirements to teach scientific creationism. NABT retained legal counsel in California, hoping to prevent the California Board of Education from implementing the pro-creationism *Framework*. In the following months, NABT stirred the interest of the scientific community, and received $12,000 in donations for its controversial "Fund for Freedom in Science Teaching." But NABT soon met with a strong backlash from its members who were creationists. In response to these members, NABT sponsored a creationism panel at its national meeting, which was attended by 1500 biologists. William Mayer of the BSCS, in a letter published in *The American Biology Teacher* (April, 1974, p. 246), condemned NABT's actions, labeling the creationists as "religious missionaries . . . smuggling religious dogma into classrooms in a Trojan horse." Mayer branded NABT as "schizoid" because it fought the inclusion of creationists' ideas via legal means while simultaneously providing them with a forum at meetings.[2] Soon thereafter, BSCS was also condemned by scientists for having "sold out" by producing a sound-slide program titled "An Inquiry into the Origin of Man: Science and Religion" (see discussion in Nelkin 1982).

In 1972, William Willoughby (an evangelist and the religion editor of the conservative *Washington Evening Star*), acting "in the interest of forty million evangelistic Christians in the United States," sued H. Guyford Stever (director of the National Science Foundation; NSF) and the Board of Regents of the University of Colorado for funding the pro-evolution BSCS textbooks, claiming that creationists should receive the same amount of money "for the promulgation of the creationist theory of the origin of man." Willoughby, who claimed that the government was establishing "secular humanism" as "the official religion of the United States," decried the "intellectual snobbery" of scientists and opposed using tax revenues to support educational programs that are "one-sided, biased, and damaging" to religious views. Willoughby received much public support, but his suit (*Willoughby v. Stever*; Civil Action No. 1574-72, D.D.C. August 25, 1972) was dismissed in May, 1973 by the U.S. District Court in Washington, DC on the grounds that 1) NSF had been disseminating scientific findings, not promoting secular humanism, and 2) the First Amendment does not allow the state to require that teaching be tailored to particular religious beliefs (see discussion in Nelkin 1982).

In 1973, a group of five Tennessee legislators—all of whom had witnessed the repeal of the Butler Law but none of whom had voted for the repeal—introduced a "Genesis Bill" that required biology textbooks in Tennessee 1) to identify evolution as a theory rather than a "scientific fact," and 2) to give "equal emphasis" to "the Genesis account in the Bible."[3] This bill, which declared the Bible to be a reference book for biology,

[2]By 1973, biologists became increasingly reluctant to acknowledge creationism; NABT's 1973 annual meeting did not mention the controversy (Nelkin 1982).

[3]Unlike Tennessee's earlier anti-evolution law that was challenged by John Scopes (Moore 1998a), the Genesis Bill was restricted to textbooks; teachers were not mentioned in the legislation.

was the brainchild of a biology professor who was a member of the Creation Research Society; it neither banned evolution nor promoted scientific creationism, yet defended creationists by qualifying the teaching of evolution. Amidst overwhelming public support and claims by legislators "that the Biblical account of creation is fact, not theory," the bill passed easily (by votes of 69-15 in the Tennessee House of Representatives and 28-1 in the Tennessee Senate) and became law one week later when Governor Winfield Dunn refused to either sign or veto the bill (Daughtrey 1973). The law was promptly challenged in federal court by NABT and three co-plaintiffs (two professors from the University of Tennessee and a public school teacher).[4] NABT contended that the bill interfered with free speech, freedom of religion, and freedom of the press as guaranteed by the First and Fourteenth Amendments (see Nelkin 1982). In 1975—50 years after the Scopes trial—Tennessee's Genesis Bill was struck down because it violated the Establishment Clause of the U.S. Constitution by mandating the instruction of a religious doctrine in public schools.

The overturning of the Genesis Bill (*Daniel v. Waters*; 515 F. 2d 485, 6th Cir. 1975; see Moore 1998d) caused many "equal time for religion" bills to die quiet deaths in several state legislatures (Larson 1989; Moore 1998b, c). For example, Georgia had passed an equal-time bill in 1973, but had tabled the legislation while the Divine Creation Committee of the Georgia House of Representatives held hearings. The Committee reported that the public wanted all theories of creation to be available in public schools, but recommended that the issue be dealt with via textbook selection rather than legislation. Soon thereafter, the "Science and Creation Series" was approved for state adoption.

During the 1970s there were protests throughout the United States about a federally funded, pro-evolution curriculum titled *MACOS* (*Man: A Course of Study*). *MACOS* had won national awards and had been praised by teachers, students and parents as a major innovation in science teaching. Nevertheless, hundreds of parents "stormed the schools" and argued that equal time be given to traditional views (Nelkin 1982). Many people equated the *MACOS* program with communism. Many of the opponents of the *MACOS* program had also opposed the introduction of the BSCS books.

In 1978, Dale Crowley and the National Foundation for Fairness in Education sued the Smithsonian Foundation in U.S. District Court to ban an exhibit titled "The Emergence of Man" that dealt with human origins. Crowley opposed federal support for the evolution-based exhibit. *Crowley v. Smithsonian Institution* (462 F. Supp. 725, 725, D.D.C. 1978) was dismissed on the same grounds as *Willoughby v. Stever*. Like the *Willoughby v. Stever* decision, the *Crowley v. Smithsonian Institution* decision was supported in appeals courts. The U.S. Supreme Court refused further review of both cases.

[4]One month later, and unbeknownst to NABT, America United for the Separation of Church and State, Inc. filed a similar suit in the state chancery court in Nashville. This suit delayed action in NABT's suit, which prompted NABT to appeal the case to the U.S. Supreme Court. The Supreme Court refused to hear the case, soon after which a court of appeals in Tennessee overturned the Genesis Bill (Moore 1998d).

In the 1970s, the BSCS textbooks were banned in Texas. By 1974, all textbooks in Texas were required to prominently display a disclaimer that evolution is a theory and one of the several explanations of origins.[5] These disclaimers were subsequently removed. When, in 1989, the Texas Education Agency proposed requiring biology textbooks to include the "scientific theory of evolution," one witness at a hearing told the board members that:

> *God is watching you. Please do not provoke his wrath.*

In 1979, the Creation Science Research Center's Kelly Segraves petitioned a California Court to overturn the California State Board of Education's *The Scientific Framework for California Schools* because the document was too dogmatic. When Segraves' petition was denied, Segraves sued in state court, claiming that the state was violating his children's rights because evolution was taught dogmatically as fact and that classroom discussions of evolution prohibited his and his children's free exercise of religion. The plaintiffs had school children plead that they should not be taught that their religious beliefs are wrong. Segraves objected to several features of a textbook titled *Principles of Science*, including a chart listing successive geologic periods over the last 4.5 billion years (the chart also placed the development of different life forms in different periods), because those features were "clearly in opposition to [their] Christian faith." During the trial, however, the creationists abandoned their request for equal treatment of the biblical account of creation; soon thereafter, they reduced their complaint to details regarding the wording of *Framework*. In *Segraves v. State of California* (No. 278978, Sacramento Superior Court, 1981), the Sacramento Superior Court 1) instructed the California Board of Education to circulate a statement stressing the need to eliminate dogmatism and include qualifying statements about speculations on the origins of life, and 2) found that *Framework* gave sufficient accommodation to the views of Segraves and his children.[6] An appeals court acknowledged the balance between religious beliefs and the right to disseminate knowledge, through schools and other institutions, but precluded a courtroom trial for religious challenges to the teaching of evolution. In 1989, the anti-dogmatism policy was expanded to include all areas of science, not just those about origins.

[5]In 1975, 80% of the biology textbooks adopted for approval by the Texas Board of Education did not mention evolution (Webb 1994). For more about the disclaimers, see Moore (1998a).

[6]In 1963, Nell Segraves (Kelly's mother, a Baptist, and a member of the Bible Science Association and the Creation Research Society) had petitioned the California State Board of Education to require that evolution be presented as a theory in all state-approved textbooks; this was done to "seek justice for the Christian child." The petition was based on the 1963 U.S. Supreme Court *Abington School District v. Schempp* decision that declared it is unconstitutional to force nonbelieving children to read prayers in school. Segraves used this decision to claim that if it is unconstitutional "to teach God in the school," then it must also be unconstitutional "to teach the absence of God." Her effort failed. Later, Nell and her son Kelly (a Baptist preacher) became directors of the Creation Science Research Center (CSRC), which fought evolution, sex education, women's rights, and gay rights. CSRC studied issues such as the relation of teaching evolution to the incidence of venereal diseases, and reported in 1977 that "the results of evolutionary interpretations of scientific data result in a widespread breakdown in law and order" that "leads to divorce, abortion, and rampant venereal disease" (see discussion in Numbers 1992).

In light of these decisions, creationists concluded that their only hope was to mount a credible *scientific* challenge to evolution. Realizing that the teaching of religious beliefs ("creationism" and similar terms) would violate the Establishment Clause of the Constitution, creationists repackaged the Bible as "creation science"[7] and demanded "equal time" and "balanced treatment" for creationism in public schools. Although Tennessee's Genesis Bill in 1973 had mandated that biology textbooks give equal emphasis to alternative theories of origins (especially the Genesis account), the most popular "balanced treatment" strategy took shape in 1978, when Yale law student and avowed creationist Wendell Bird presented an award-winning legal justification for teaching evolution and creation science in public schools (Bird 1978; Bird would later make similar arguments to the U.S. Supreme Court; see Moore 1999).[8] Bird built his "equal time" argument on Supreme Court decisions that recognized the rights of religious minorities such as Jehovah's Witnesses and the Amish to practice their beliefs without state interference (Irons 1988). This strategy was remarkably effective, for it changed the discussion from the realm of science to the realm of popular idiom (Taylor & Condit 1988). In doing so, Bird held the teaching of evolution not to the scientific standard of testable evidence, but rather to the political concept of fairness and equal time.

After graduating from law school, Bird joined the Institute for Creation Research (ICR)[9] as a legal advisor. There, he used his award-winning article as a basis for revising and providing a constitutional justification for ICR's "equal time" resolution, which Henry Morris had drafted early in 1975 (Larson 1989). Bird's revision was a Baconian effort to equate creationism with science and was based on several key arguments (Bird 1979):

> Creationism is as scientific as evolution, and evolution is as religious as creationism.
>
> Because scientific creationism is science rather than religion, it is not subject to Establishment-Clause challenges.
>
> Although teaching only creationism may violate religious freedoms, the presentation of "both the theory of evolution and the theory of creationism would not [violate religious freedoms] because it would involve presenting the scientific evidence for each theory rather than any religious doctrine."
>
> Presentations of both theories "must be limited to scientific evidence and must not include religious doctrine."
>
> There must be a "balanced treatment" of both theories in classroom lectures, library materials, and other educational programs. Neutralizing the public schools' instruction with a "balanced treatment" of origins would not advance religion.
>
> The failure to teach scientific creationism violates the First Amendment because it gives "preference to religious Liberalism, Humanism, and other religious faiths" (Bird 1979). It does this by implying an official disapproval of some religious beliefs while simultaneously putting the prestige of science and the state behind other religions.
>
> Teaching scientific creationism would ensure the State's neutrality, for both major theories would be taught.[10] This, in turn, would ensure academic freedom, a well-rounded scientific education, and the protection of everyone's First Amendment rights.

Like many of those before him, Bird invoked the legacy of William Jennings Bryan by reminding people of the popularity of the "balanced treatment" proposition:

> *Most citizens, whether they personally believe in evolution or creation, favor balanced treatment in public schools.*

ICR distributed thousands of copies of Bird's resolution in mid-1979, each with a disclaimer that the language was a suggested resolution for boards of education, not legislation to be enacted as law (Larson 1989). Bird's efforts prompted several fundamentalist organizations (e.g., Henry Morris' ICR, the Bible-

[7] In the 1970s and 1980s, "creation science" became increasingly popular. On occasion, the anti-evolution sentiment that accompanies creation science influenced federal funding for science. For example, in 1976, Arizona Congressman John Conlan—partially in response to complaints about *MACOS*—sponsored an amendment to the National Defense Education Act that would "prohibit federal funding of any curriculum project with evolutionary content or implications." The amendment passed by a vote of 222-174 (Taylor 1992). Although the Senate narrowly rejected the amendment, funding for some projects (including many at the National Science Foundation) was delayed pending a review of their "evolutionary content." (e.g., see McDonald 1986; Zimmerman 1989; Eve & Harrold 1991).

[8] At Yale, Bird studied under later Supreme Court nominee Robert Bork (Eve & Harrold 1991).

[9] ICR (*http://www.icr.org*) originated at an affiliate of the Christian Heritage College, which was established as an unaccredited Baptist college linked with the Moral Majority in San Diego, California (see Gilkey 1985). Christian Heritage College is presided over by Rev. Tim LaHaye, a long-time associate of Moral Majority leader Jerry Falwell and author of books such as *The Battle for the Schools*. ICR has been supported by various Baptist churches and was established to address the "urgent need for our nation to return to belief in a personal, omnipotent Creator, who has a purpose for His creation and to whom all people must eventually give account." A goal of ICR is "a revival of belief in special creation as the true explanation of the origin of the world." The Institute publishes a variety of anti-evolution books (e.g., Gish 1995; Bird 1989) and offers graduate degrees from a "somewhat unique perspective." ICR often helps with local efforts to mandate the teaching of creationism (Berman 1997). The president of ICR is John Morris (Henry Morris' son), who searches for Noah's ark and promotes the alleged coexistence of dinosaur tracks and human footprints in the Paluxy River bed of Texas. His *The Young Earth* (Morris 1994) includes 70 pages of overhead projector masters designed to "be shared with your church or Bible study groups."

[10] The emphasis on *neutrality* in this and other cases involving religion came from the 1963 U.S. Supreme Court ruling that mandatory Bible readings and prayers in public schools were unconstitutional. This decision, prompted by efforts of atheist Madeline Murray, endorsed a policy of governmental *neutrality* (see Numbers 1992). U.S. Supreme Court Justice Abe Fortas' opinion in *Epperson v. Arkansas* (Moore 1998c) overturned the ban on the teaching of evolution because the anti-evolution law's primary effect was not neutral. What, argued the creationists, would be more neutral than "balanced time" and "equal treatment" of creationism and evolution?

Science Association; see Scott 1994) to produce propaganda for convincing school boards, administrators and teachers that creationism should be taught in public schools "to protect academic freedom," to protect freedom of religion, and to bar discrimination. The religious agenda of these publications was usually obvious. For example, ICR began publishing two versions of their textbooks, one for Christian schools and one for public schools. The versions were identical except the public school editions avoided specific references to God, the Bible, and Noah. The "creative work of God" became "Creation," and "God" became the "Master Designer" (see discussion in Nelkin 1982). Other publications blamed the teaching of evolution for societal problems such as the spread of venereal disease.

Creationists' demands for "equal time" and "balanced treatment" in public schools received (and continue to receive) an inexplicably favorable public response (Taylor & Condit 1988); language supporting such treatments of evolution and creationism has appeared in textbook adoption guidelines in several states (e.g., the Texas Education Agency told publishers that books submitted for adoption should discuss "scientific evidence of evolution and reliable scientific theories to the contrary"; see Scott 1994). By the late 1970s, tens of state legislatures were considering "equal time" laws. Arkansas and Louisiana were among the states that passed "balanced treatment" statutes, which required "creation science" to be taught in schools in which evolution was taught and forbade the teaching of evolution unless accompanied by instruction in creation science.

The first challenge of an "equal time" law would occur in Susan Epperson's home state of Arkansas.

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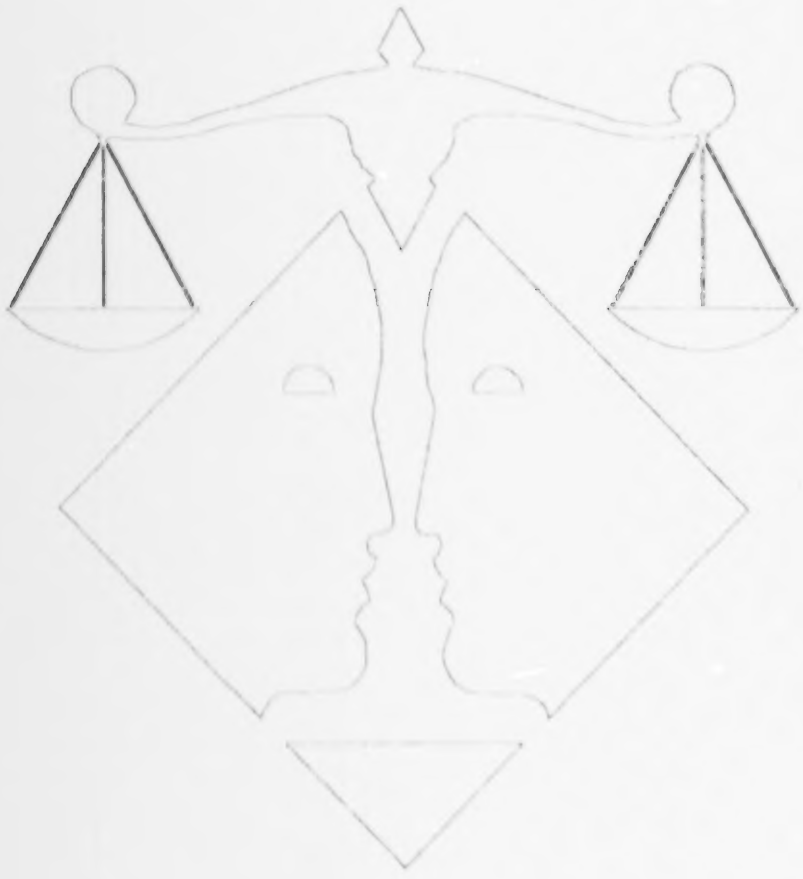

There are many generalizations in biology, but precious few theories. Among these, the theory of evolution is by far the most important, because it draws together from the most varied sources a mass of observations which would otherwise remain isolated.
—Francois Jacob, 1973

Let us present as many theories as possible and give the child the right to choose the one that seems most logical to him. We are working to have students receive a fair shake.
—Henry Morris, 1973

5

We Can Settle It Once and for All...

The *McLean* Decision Destroys the Credibility of "Creation Science"

CONTRARY to public opinion, the U.S. Supreme Court has not heard a case involving whether "creation science" is science, and has not ruled that creation science is not science. However, these questions *were* answered in a federal court in *McLean v. Arkansas Board of Education*. *McLean v. Arkansas Board of Education* was a pivotal test of creationists' efforts, for it was the first test of legislation designed to avoid the constitutional problems that had doomed previous attempts by creationists to force their beliefs into public schools (La Follette 1983; Nelkin 1982; Prelli 1989; Moore 1998a-c, 1999a). In addressing the reasonableness of giving balanced treatment to creationism in the science curriculum, *McLean v. Arkansas Board of Education* is unique and remarkably instructive, not just for understanding the evolution/creationism debate, but also because it provides a legal analysis of what science is and what science isn't, as well as how science is defined by a nonscientific legal system. Although *McLean* isn't the final word about the rhetoric of science, religion and law, it is a valuable case-study (Willard 1996).

McLean began in late 1980, when Paul Ellwanger (founder of the South Carolina-based Citizens for Fairness in Education) used Wendell Bird's "equal time" resolution (Moore 1999a) as a basis for a sample bill to introduce "creation science" into the public schools (Taylor & Condit 1988).[1] The intent of Ellwanger's bill was summarized in its opening sentence:

> *Public schools within this State shall give balanced treatment to creation-science and to evolution-science.*

Ellwanger's bill represented a religious crusade that called for equal time in science classrooms for presenting creationism and evolution as models of how the universe came into being and how life came to be.[2] Ellwanger's bill tried to include in Arkansas' public schools the "theory of origins" by requiring that equal time and attention be given to "competing theories" of human origins. This requirement was portrayed as a way of protecting academic freedom, ensuring freedom of religious exercise, guaranteeing freedom of belief and speech, preventing "the establishment of theologically liberal, humanistic, nontheist, or atheist religion," and prohibiting discrimination on the basis of either belief (Balanced treatment, 1981). Ellwanger's bill made its way to Reverend W.A. Blount, a biblical literalist and chairman of the Greater Little Rock Evangelical Fellowship. At the time, the Pulaski County School Board was trying to decide whether to include creationism in its curriculum, and Blount believed that "this was an idea whose time had come" (Luxenberg 1981; Taylor & Condit 1988; Larson 1989). At Blount's request, the Greater Little Rock Evangelical Fellowship voted unanimously to try to introduce Ellwanger's bill in the Arkansas legislature. In 1981 the bill was given to a member of Blount's congregation, a self-described "born again fundamentalist" named James Holsted. Holsted, a state senator from North Little Rock, agreed to sponsor the bill in the state legislature (Taylor & Condit 1988; Figure 5.1).[3] The Greater Little Rock Evangelical Fellowship joined a group called FLAG (Family Life, America and God) to lobby for the bill (Eve & Harrold 1991). Holsted admitted that the bill favored religious fundamentalists and acknowledged that he "didn't know anything about that [creation-science] stuff." Nevertheless, he sponsored the bill because of his own religious convictions and because the legislation was "of course" related to religion (Brummett 1981a):

> *I think you should teach the scientific theory of a Creator . . . I believe in a Creator and I believe that God created*

[1]Ellwanger had failed to introduce a similar resolution in South Carolina, but comparable bills were introduced in the legislatures of eight states in 1980, and 14 such assemblies in 1981 (Heard 1982).

[2]Ellwanger tried to conceal his crusade by advising preachers not to talk about the issue in public and not to present their positions in a religious framework (Gilkey 1985).

[3]Although Senator Holsted's bill listed seven "legislative findings of fact" about what was taught in public schools, there was no meaningful fact-finding by the General Assembly; moreover, Holsted did not discuss the bill with scientists, science educators, anyone from the attorney general's office, or the state Board of Education (Taylor & Condit 1988). The legislation was not referred to any Senate committee for hearing and was passed after only a few minutes of discussion. In the House, the bill received a

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'Creation-science' Bill Prompted By Religious Beliefs, Sponsor Says

By JOHN BRUMMETT
Of the Gazette Staff

State Senator James L. Holsted of North Little Rock, the sponsor of the "creation-science" bill that has become law in Arkansas amid a national stir, says he introduced it because of his own religious convictions and that the legislation is "of course" related to religion.

The bill, which was signed Thursday by Governor Frank White, will require public schools in Arkansas to teach the theory of creation-science alongside its instruction in evolution. Arkansas has become the first state to enact such a law.

To teach creation-science, one must teach that there was a Creator, Holsted said in an interview Friday.

"I believe in a Creator and I believe that God created this universe," he said. "I can't separate the bill from that belief. All of we legislators have prejudices and beliefs that affect what legislation we introduce.

"My job as a politician, and as a senator from North Little Rock, is to introduce something that represents my beliefs and

Holsted: 'I can't separate the bill from that belief.'

Figure 5.1. State Senator James Holsted admitted that he introduced the Arkansas "creation science" bill because of his own religious beliefs. This headline appeared on the front page of the 22 March 1981 issue of the *Arkansas Gazette*.

this universe. I can't separate the bill from that belief. All of we legislators have prejudices and beliefs that affect what legislation we introduce ... Probably the ones who are going to be the strongest supporters of the legislation are fundamentalists.

On Friday, March 13—in the waning days of the 1981 legislative session—the bill (now referred to as Act 590: The Balanced Treatment for Creation-Science and Evolution-Science Act) passed the Senate by a vote of 20-2; after a vote to suspend parliamentary rules, cheering members of the House passed the law on March 17, 1981 by a vote of 69-18. As legislators rushed to finish last-minute business, all attempts to amend or debate the bill on the House floor were ruled out of order. As noted by one of the few legislators who disliked the bill (Larson 1989):

This is a terrible bill, but it's worded so cleverly that none of us can vote against it if we want to come back up here.

Two days later, Republican Governor Frank White signed the bill into law despite the fact, as he would later admit, that he didn't read it (e.g., Law on creation, 1981; Taylor & Condit 1988; Brummett 1981b; Figure 5.2). His justification for supporting the bill was simple (Larson 1989):

perfunctory 15-minute hearing by the Education Committee. No scientist or representative from the State Department of Education testified at the hearing.

He Hasn't Read It, But White Signs Bill on 'Creation'

By JOHN BRUMMETT
Of the Gazette Staff

Governor Frank White Thursday signed SB 482, the bill requiring the public schools to teach "creation-science," then admitted later at his weekly press conference that he hadn't read the entire bill and was unfamiliar with at least one of its provisions.

With Mr. White's signature, Arkansas became the first state in the country to require that the theory of "instantaneous creation" be taught in public schools as a science along with evolution. The bill became Act 590.

The bill was favored by fundamentalist religious groups that supported Mr. White in the recent election. The governor had 20 days in which to act on the bill, but he chose to sign it — without a public ceremony — the second day it was on his desk. The bill was sponsored by Senator Jim Holsted of North Little Rock, who said it was delivered to him by a minister.

Figure 5.2. On 19 March 1981, Arkansas governor Frank White signed into law the legislation requiring public schools to teach "creation science." White signed the legislation without ever having read it. The legislation would be declared unconstitutional in 1982 by Judge William Overton in *McLean v. Arkansas Board of Education*.

If we're going to teach evolution in the public school system, why not teach scientific creationism? Both of them are theories.

The entire legislative process for Act 590—from its initial consideration in the Senate to its approval by the governor—took less than a week.

The law was immediately attacked by a variety of people and groups. Susan Epperson, whose earlier challenge had reversed the ban on teaching evolution in public schools (Moore 1998c), emerged to denounce Act 590 as an effort to teach religion in schools, adding that creation science is religion and that (Creation science act improper, 1981):

I am a strong Christian, but I feel that Christianity, or religion whatever it might be, is not proper in the science classroom ... [Creationists] seem to think that their religion will be wiped out if the concept of evolution is taught.

Yet the fact remained: thanks to the legal theories of Wendell Bird (Moore 1999a) and the scientific claims of Henry Morris (of the Institute for Creation Research), "equal time" was the law in Arkansas.

The Appeal of Act 590

On 27 May 1981, the Little Rock chapter of the ACLU filed suit on behalf of 23 Arkansas citizens

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and organizations (including the National Association of Biology Teachers and various groups of Catholics, Jews, Methodists and Presbyterians) in U.S. District Court, charging that Act 590 was a disguised attempt to establish religion in the public schools and therefore violated the First Amendment (Griffee 1981a).[4] Holsted, like others before him, was confident that his legislation was constitutional (Brummett 1981a):

> *I welcome a court challenge, so we can settle it once and for all.*

The plaintiffs—represented by Little Rock ACLU attorneys Phillip Kaplan and Robert Cearley—asked the court to void Act 590 and issue a permanent injunction against the law's enforcement because it violated constitutional guarantees of academic freedom and was unacceptably vague (Griffee 1981a; Taylor & Condit 1988). The opening statement by Cearley summarized the case (Gilkey 1985):

> *We . . . challenge this law as unconstitutional, as contrary to the First Amendment since it represents in fact the teaching of a religious doctrine in the guise of science. We will seek to prove that creation science, far from being science, is actually a religious apologetic . . . Thus the Act represents the establishment of a particular religious point of view, the preference of one religion over another in the public schools, and the inevitable involvement as a consequence of the State in the affairs of religion . . . Scientists will show that creation science . . . is not science, that its theory does not, and could not . . . exist in the world of science, and does not use the scientific method . . . Liberty of religion has been given to us all; this Act violates these fundamental principles of our common life.*

The anti-evolution defendants of Act 590 were the Arkansas Board of Education and its members, the director of the Arkansas Department of Education, and the State Textbooks and Instructional Materials Selecting Committee. Despite "personal qualms," Arkansas Attorney General Steve Clark headed the state's defense (Taylor & Condit 1988), for which the Creation Science Research Center offered its help (No help needed on Act 590, 1981). Clark denounced press descriptions of the case as the "creationism trial" and claimed instead that the trial was about two political concepts: fairness and tolerance (Taylor & Condit 1988). Clark also argued that the legislation broadened the search for truth (Gilkey 1985):

> *The fact that some of the implications of the Act are parallel with, or consistent with, so called "religious doctrines" in Genesis or in fundamentalist documents, is quite irrelevant . . . The purpose of the Act is definitely not religious. On the contrary, it has a secular purpose, namely to broaden the discussion of origins to more than one exclusive model. Thus, far from restricting teaching, the law broadens the search for truth and furthers academic freedom. The issue is not whether creation science is science or not; neither model qualifies strictly as science, as we will show. We will also show that creation science is at least as scientific as is evolutionary science, and so at least as nonreligious as the latter . . . The act is neutral and immensely educational.*

Although Clark angered many creationists when he rejected Wendell Bird's offer to participate in the trial (Eve & Harrold 1991), he based his defense on Bird's outline (Irons 1988; Moore 1999a).[5] Specifically, Clark argued that 1) there was enough scientific evidence to make creationism a legitimate alternative theory of human origins, 2) creationism deserved balanced treatment in the classroom (to compete with the theory of evolution), 3) creationism could be taught without reference to religion, and 4) the exclusion of creationism from the classrooms of public schools was an infringement on academic freedom (Stuart 1981a; Taylor & Condit 1988).

Understanding the precedent established by *Epperson v. Arkansas*, creationists did not ostensibly try to ban or criminalize the teaching of evolution from public schools. Rather, they wanted a guarantee that creation science would be given equal time if a teacher taught evolution. With this strategy the creationists used Act 590 to try to move the discussion from the evidentiary realm of science to "fairness" of the popular idiom; that is, they equated the teaching of creationism with fairness and equity. This use of a powerful sociocultural motive (i.e., the demand of similar treatment regardless of merit, as is given for voting rights, freedom of belief and expression, and other aspects of the "American way") guaranteed a hearing by the national media (Taylor & Condit 1988). Assistant Attorney General Williams argued that (Stuart 1981a):

> *The question is not what the majority opinion [of scientists] is, but whether a majority should be allowed to squelch a minority [scientific] view.*

Some newspapers sided with creationists by stating that "calls for fairness are at the heart" of the creation science movement (Horowitz 1981). William Jennings Bryan would have been proud.

The creationists' strategy was successful: a 1981 poll by *NBC News* found that 76% of Americans

[4]Among the plaintiffs was Rev. Bill McLean, a Methodist minister for whom the trial would be remembered (i.e., *McLean v. Arkansas Board of Education*). The National Association of Biology Teachers was the only scientific organization listed on the suit. No religious groups appeared on the list of defendants.

[5]Bird was upset by his exclusion from the case, and told many of the witnesses for the State that the defense was poorly prepared to defend the law. As a result, several of the State's witnesses failed to appear (Nelkin 1982). Clark could find no credible scientists who accepted creationist arguments, or creationists with scientific credentials. Clark ended up with witnesses who testified that they believed life on Earth began from "cometary seeding," and biblical literalists who denied that contrary evidence could shake their beliefs (Irons 1988; also see "Are Creationists Employed by Leading Scientific Research Institutions?" below). Bird and other creationists (including television preachers Pat Robertson and Jerry Falwell) responded by denouncing Clark as an ACLU stooge who did not want to win the case (Eve & Harrold 1991; Irons 1988). In response, there was a defamation action against Robertson (Nelkin 1982).

favored equal presentations of evolution and creationism in public schools. Incredibly, 18% favored the presentation of only creationism, while only 6% favored a central focus on evolution (see Nelkin 1982; Eckberg & Nesterenko 1985; Miller 1987). Even then-President Ronald Reagan got involved by saying that (Republican candidate, 1980):

> *If [evolution] is going to be taught in the schools, then I think that also the biblical theory of creation should also be taught.*

The public wanted (and continues to want) creationists to have equal time in public schools (Taylor & Condit 1988).

To help their cause, creationists tried to "get their message out" before the trial. Their pamphlets defined "creation science" according to traditional fundamentalist tenets (e.g., a young Earth, explanation of the earth's geology by catastrophism) and presented evolution and creationism as intellectually equal ideas, both of which are ultimately grounded in nothing more than personal conviction (Taylor & Condit 1988). As Robert Kofahl suggested (Sehlstedt 1981):

> *Neither evolution nor creationism are testable theories—that is theories that can be proved false in the laboratory. These are faith views . . . We have two groups of thinkers who interpret in a way to support their own philosophy.*

If this view was accepted by the court, fairness would dictate balanced treatment—that is, that creationism be taught in public schools. Creationists also claimed that scientists were censors of academic inquiry; one creationist referred to science as "thought control," and Irving Seager, an Arkansas biology teacher who had included creationism in his course since 1968, told the *Arkansas Gazette* that "most science teachers don't know anything but evolution and won't even consider accepting anything else . . . they are just as intolerant as they accuse the creationists of being. . ." (Griffee 1981b; also see discussion in Taylor & Condit 1988; Griffee 1981b). In the midst of these emotional charges and countercharges, the trial began.

The Trial

McLean v. Arkansas Board of Education (1982 529 F. Suppl. 1255, 50 US Law Week 2412) occurred in Federal District Court in Little Rock, Arkansas and was presided over by Judge William R. Overton. Overton, who was appointed to the Arkansas federal bench by President Jimmy Carter, differed from Judge John Raulston (in the *Scopes* case; see Moore 1998a) and Chancellor Murray Reed (in the *Epperson* case; see Moore 1998c) by allowing both sides to present a parade of expert witnesses (Irons 1988). Overton was known as a judicial traditionalist who relied heavily on precedent and shied away from making new laws (Trimble 1981; Taylor & Condit 1988). ICR's Wendell Bird petitioned to intervene on behalf of the creationists, but his petition was rejected.[6] The trial consisted almost exclusively of legal arguments, not performance. There was no Darrow to confront Bryan.

Clark argued that creationist instruction would serve the constitutionally valid purpose of neutralizing evolutionary teaching, after which he presented evidence of the overwhelming public support for the "equal time" statute (Defendant's trial brief, 1981). Newspapers labeled the trial as a "monkey trial," and Bruce Ennis (of the ACLU) and Kelly Segraves (director of the Creation Science Research Center; see Moore 1999a) debated the issues on television shows such as *Donahue* (Monkey trial seen in suit over Act 590, 1981).[7] Despite the huge amount of public attention paid to the trial (e.g., more than 75 news organizations asked for press credentials required to get into the Little Rock Federal Courthouse; see Seventy five, 1981) and occasional courtroom antics by religious people attending the trial,[8] Overton (an appointed judge not concerned with reelection) made it clear that his decision would not be affected by public opinion. As he said (see Wells 1981):

> *I don't read letters that are sent to me about the case and I don't accept collect calls either.*

And as he later wrote in his opinion:

> *The application and content of First Amendment principles are not determined by public opinion polls or by a majority vote. Whether the proponents of Act 590 constitute the majority or the minority is quite irrelevant under a constitutional form of government. No group, no matter how large or small, may use the organs of government, of which the public schools are the most conspicuous and influential.*

The trial began on 7 December 1981 and ended on 17 December 1981, "not with a bang but a whimper" (Gilkey 1985). On 5 January 1982 Overton issued a 38-page "sharp and unambiguous" decision (Nelkin 1982)[9] that is instructive to understanding the values

[6]Soon after being excluded from the Arkansas trial, Bird went to Louisiana and became involved in another lawsuit by creationists. That lawsuit eventually made it to the U.S. Supreme Court (see Moore 1999b).

[7]Bill Aldridge (then the Executive Director of NSTA) and Wayne Moyer (then the Executive Director of NABT) spoke out against Act 590, claiming that the teaching of "creation science" in biology classes is like propounding the flat-earth theory in physics classes. Both Aldridge and Moyer claimed that Act 590 was a disguise for teaching religion in public schools. As Moyer said, "The law is going to be laughed at. Good teachers will realize they have an obligation to the subject matter. . . [Act 590] places the state in the position of defining by law what is truth in science" (Educators criticize creationism bill, 1981).

[8]When Professor Dorothy Nelkin said during the trial that she did not believe in a personal God, three spectators rose from their seats, stepped into the aisle, sank to their knees, and began "very audible prayers" for the skeptical professor (Gilkey 1985).

[9]Overton's *McLean v. Arkansas Board of Education* (529 F. Supp. 1255, 1258-1264 [ED Ark. 1982) ruling, which has been referred to as "an amazing intellectual document" (Gilkey 1985), is available

of law and science. The first part of his decision addressed a fundamental question: Did Act 590 violate the First Amendment of the U.S. Constitution?

Did Act 590 Violate the First Amendment?

To make a meaningful and reasonable decision, Overton sought legal criteria to apply the Establishment Clause to the issues in the case (see Prelli 1989). Specifically, Overton relied on the so-called "Lemon Test" to determine whether the Establishment Clause had been violated (see Moore 1999a). The Lemon Test required school boards and legislators to ensure that statutes 1) have a secular purpose, 2) neither advance nor inhibit religion, and 3) do not result in excessive entanglement of government with religion.[10] If an action by a board or legislature violates any one of these requirements, it is unconstitutional. The plaintiffs tried to show that Act 590 violated *all* of the tenets of the Lemon Test (see Prelli 1989).

Did Act 590 Have a Secular Legislative Purpose?

The plaintiffs argued that Act 590 did not have a secular purpose by exposing the sectarian motives behind the legislative efforts to enact the bill (Figure 5.1). Overton agreed with the plaintiffs (see Pope 1982; Taylor & Condit 1988):

> *The only inference which can be drawn from these circumstances is that the Act was passed with the specific purpose by the General Assembly of advancing religion. The Act therefore fails the first prong of the three-pronged test, that of secular legislative purpose ... The evidence is overwhelming that both the purpose and effect of the creationism act is the advancement of religion in public schools.*

The *Epperson v. Arkansas* decision had not addressed this part of the Lemon Test, probably because the justices didn't believe that the anti-evolution laws had any effect in modern America. But the "equal time" requirement could have an effect. Overton concluded that the effect would be religious.

Did Act 590 Advance Religion?

The plaintiffs focused on the "inescapable religiosity" of the statute (Overton 1985) by using theologians to establish that claims such as "creation from nothing," a worldwide flood, the relatively recent inception of Earth, and "creator" identified themes peculiar to Western religion and held no scientific meaning (Taylor & Condit 1988; Prelli 1989). Overton concluded that Ellwanger, Blount, Holsted, and the Greater Little Rock Evangelical Fellowship were motivated by their religious beliefs and their desire to see the biblical version of creation taught in public schools (Brummett 1981a). Overton agreed with the plaintiffs' claim that the intent of Act 590:

> *was simply and purely an effort to introduce the Biblical version of creationism into the public school curricula*

and that:

> *the only real effect of Act 590 is the advancement of religion.*[11]

The plaintiffs portrayed creationism as an extensive encompassing framework of fundamentalist Christian thought and argued that creationists' claims are derived from the belief that a God has made supernatural interventions. Overton responded:

> *If the unifying ideas of supernatural creation by God are removed from [the Act], the remaining parts of the section explain nothing and are meaningless assertions.*

Would Act 590 Produce an Excessive Entanglement of Government with Religion?

The evidence convinced Overton that Act 590 would create "an excessive and prohibited entanglement [of government] with religion" because compliance would involve federal and state authorities in "delicate religious judgments" when called upon to screen course materials and classroom discussions for religious references (see Taylor & Condit 1988).

When evaluating the constitutionality of Act 590, Overton also considered intentions. Early in the trial the State tried to exclude all evidence about the religious roots of creationism; they argued that because Act 590 prohibited religious references, evidence of religious links was irrelevant (Taylor & Condit 1988). Overton disagreed; he ruled that such testimony was relevant because "an ACLU contention is that creation-science is religion in disguise" (Attempts thwarted, 1981). As Overton said (Kenyon 1981b; Taylor & Condit 1988):

> *They can't wear two hats. The writers can't call it religion for one purpose and science for another.*

Later, Overton was more explicit (Wells 1984):

> *The problem was that all these "creation-science" writers have permeated their materials with a religiosity that they can't shed.*

Overton also noted that Ellwanger—the founder of Citizens for Fairness in Education and the author

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at *http://cns-web.bu.edu/pub/dorman/McLeanvsArkansas.html* and in Creationism in schools (1982).

[10]The "secular purpose" prong of the Lemon Test resulted largely from the *Epperson v. Arkansas* decision that legalized the teaching of evolution (Moore 1998c). Note that the test doesn't say that a law may not also have a religious purpose or that the secular purpose has to be the primary purpose of the law. Similarly, the test doesn't mean that a law can't have *any* effect on advancing religion, or that a law needn't have *any* entanglement with religion. The Lemon Test was derived from *Lemon v. Kurtzman* (403 US 602, 612–613 [1971]).

[11]The long history of official opposition to evolution which is motivated by adherence to fundamentalist beliefs in the inerrancy of the Book of Genesis is documented in Justice Fortas' opinion in *Epperson v. Arkansas*.

of Act 590—had no legal or scientific credentials for advocating Act 590 (Ellwanger was a respiratory therapist trained in neither law nor science; Prelli 1989). Like fundamentalists before him, Ellwanger believed that evolution is responsible for social ills such as Nazism and abortion. Overton concluded that Ellwanger had religious intentions for sponsoring Act 590, citing Ellwanger's letter to Louisiana Senator Bill Keith saying that:

> *I view this whole battle as between God and anti-God forces, though I know there are a large number of evolutionists who believe in God . . .*

Although Overton considered the defendants' intentions when making his ruling, he concluded that if only the language of the act were considered, it would still be evident:

> *that both the purpose and effect of Act 590 is the advancement of religion in the public schools.*

Thus, Overton ruled that Act 590 failed all three tests for constitutionality. Interestingly, however, Overton's ruling didn't stop there; he also addressed whether "creation science" is, in fact, science.

Is "Creation Science" Really Science?

The question "Is creation science really science?" was critical to Overton. To answer this question, Overton could not rely only on applying clearly defined legal standards to the facts of the case (Prelli 1989). Rather, Overton had to set boundaries to distinguish science from nonscience. In doing so, Overton decided that science is what is "accepted by the scientific community" and "what scientists do." Overton also declared political standards of reasonableness irrelevant to deciding what is scientific:

> *In a free society, knowledge does not require the imprimatur of legislation in order to become science.*

Overton's decision to defend the scientific community as the appropriate agencies for deciding what does and does not count as science (i.e., that "science is as science does")[12] was critical. ACLU counsel Mark Herlihy invoked the claim of Clarence Darrow when he suggested that the (La Follette 1983; also see Taylor & Condit 1988):

> *greatest success of the* McLean *opinion was its . . . implicit reliance on the efficacy and integrity of specialized communities—such as the scientific and educational communities—to be the proper arbiters of claims of legitimacy made within their proper spheres.*

[12]In the trial, scientists defined science by its hallmarks: critical thinking, rational examination of evidence, and intellectual honesty enforced by skeptical scrutiny. In light of these criteria, creationist doctrines were easily identified as nonscientific. The Committee on Science and Creationism of the National Academy of Sciences concluded "that creationism, with its accounts of the origin of life by supernatural means, is not science" (National Academy of Sciences 1984).

Overton's decision had two important consequences, both of which were setbacks for creationists (Taylor and Condit 1988):

- It validated professional scientific societies and excluded providers of "similar" services who falsely claim to be within the profession (Gieryn, Bevins & Zehr 1985; Prelli 1989). This enabled the plaintiffs to define creationists as scientific outsiders and creationism as beyond the pale of scientific reasonableness.
- It denied creationists the moral, political and religious standards that are their strongest sources of persuasive arguments with nonexpert audiences.

Despite these setbacks, creationists tried to convince Overton that they were scientists and that creation science is, in fact, science. The plaintiffs argued the opposite; namely, that creationists are not scientists, "that creation-science is less than a weak or bad science; it is not science at all" (see Taylor & Condit 1988), and that "creationism . . . is thinly disguised religion." Overton had to decide a variety of issues (see discussion in Holtzman & Klasfeld 1983). For example, what decides who is a member of "the recognized scientific community"? Who is a scientist? What is science? All of these issues were summarized in the following five questions that Overton addressed in his decision. Each of these questions is instructive to understanding the values of law and science:

- Do creationists' claims constitute reasonable scientific claim-making?
- Do creationists display the qualities of professional scientists?
- Do creationists do what scientists do—namely, publish articles frequently in authorized scientific journals and submit technical claims about creationism for peer review?
- Are creationists employed by leading scientific research institutions?
- Do creationists have scientific evidence to support their claims?

Do Creationists' Claims Constitute Reasonable Scientific Claim-Making?

The plaintiffs tried to show that creationists' claims do not constitute reasonable scientific claim-making by arguing that 1) creationists lack the virtues of skepticism, universality and disinterestedness that are the hallmarks of science, 2) creationists do not think or act like scientists and therefore are not credible expert witnesses, 3) creationists are dogmatic rather than skeptical, 4) creationists refuse to admit the validity of universally obvious scientific facts, and 5) creationists' conclusions are biased by creationists' greater interest in advancing religion than in discovering truth (i.e., their writings are not motivated by knowledge-related goals, instead they try to conceal what cannot be sought openly—namely, the establishment of religious doctrine in public schools; Gieryn et al. 1985). Taken together, these arguments tried

to convince Overton that creationists are not scientists at all, but instead are dogmatically proclaiming the inerrancy of Scripture. To support this claim, the plaintiffs pointed out that most "creation scientists" were members of the Creation Research Society and, as such, were required to take oaths to attest to their beliefs in a literal interpretation of the Genesis story of creation, their fidelity to beliefs in God, and the literal truth of scriptures (Taylor & Condit 1988; *Amicus curiae,* 1986). The fact that members were required to sign such an oath showed that they didn't have a skeptical outlook that is proper for scientists.[13]

Do Creationists Display the Qualities of Professional Scientists?[14]

The plaintiffs argued that creationists do not have good standing in the scientific community because they refuse to share in scientific debates about non-controversial issues and do not participate actively in a scientific intellectual life (Gieryn et al. 1985). For example, a creationist geologist admitted under cross-examination that "he had [published] only two articles in standard scientific journals since getting his Ph.D. in 1955"—hardly a publication record for a geologist actively engaged in the intellectual life of his professional community (Gieryn et al. 1985; also see below). Such admissions weakened the credibility of "expert" witnesses produced by the pro-creationism defense and helped convince Overton that creationists do not display the qualities of professional scientists.

Do Creationists Do What Scientists Do?

That is, do creationists publish frequently in authorized scientific journals and submit technical claims about creationism for peer review? The plaintiffs argued that creationists did not display the scientific virtue of community because they neither produce nor disseminate credible scientific knowledge, practices which characterize the *raison d'être* for scientific communities. Creationists displayed a lack of scientific community by failing to submit their technical claims about creationism to peer review.[15] Creationists argued that they could not publish in standard journals because of editorial bias, claiming that editors and evolutionary biologists were guilty of "censorship," of "country-club exclusion," and of trying to keep theories that "were incompatible with their persona or philosophical views out of the marketplace of ideas" (see Taylor & Condit 1988). However, no proponent of creationism offered a rejected submission to a scientific journal, prompting Overton to dismiss creationists' claims that they had been unfairly ignored by the scientific community.[16] Overton concluded that the absence of reputably published articles supporting creation science was evidence that creationists were either unwilling to submit or unable to meet the standards recognized by scientific journals.

Are Creationists Employed by Leading Scientific Research Institutions?

The State rested its case on the claim that competent scientists accepted creationism as good science. But creationists had problems finding recognized scientists who could testify on behalf of creationism without being discredited for their religious presuppositions. Morris and his colleagues at ICR were not considered because they had already admitted their religious uses of creationism, and those purposes conflicted with the law.[17] Norman Geisler, who was

[13]Similarly, the editorial policy of the *Creation Research Society Quarterly* includes a "Statement of Belief" that proclaims that "The Bible is the written word of God ... all its assertions are historically and scientifically true in all of the original autographs. To a student of nature, this means that the account of origins in Genesis is a factual presentation of simple historical truths" (see Taylor 1992; Eve & Harrold 1991). Members of the Creation Research Society, "an organization of Christian men of science, who accept Jesus Christ as [their] Lord and Savior," must also subscribe to the claims that "All ... living things, including man, were made by direct creative acts of God ... as described in Genesis ... The special creation of Adam and Eve as one man and one woman, and their subsequent Fall into sin, is the basis for [their] belief in the necessity of a Savior for all mankind ... Salvation can come only thru [sic] accepting Jesus Christ as [their] Savior" (see Note 3 of *Edwards v. Aguillard*).

[14]Many prominent creationists have advanced degrees from prestigious institutions. For example, Duane Gish (Associate Director of the Institution for Creation Research) has a Ph.D. in biochemistry from the University of California at Berkeley, Henry M. Morris (Director of the Institution for Creation Research) has a Ph.D. in hydraulics from the University of Minnesota (Taylor 1992), and Kurt Wise (a science professor at Bryan College) was trained at Harvard University by Stephen Gould. Morris, the most influential creationist of this century, blames evolutionary theory for "communism, fascism, Freudianism, social Darwinism, behaviorism, Kinseyism, materialism, and atheism," to name just a few. Morris also claims that people who believe in evolution are "lost to salvation" and "face eternal damnation" (see discussion in Scott 1994).

[15]Most of the creationist literature was published by Creation-Life Publishers, which Overton concluded was a religiously motivated publishing company, not a legitimate forum for communicating or testing scientific ideas (Prelli 1989).

[16]Creationists continue to blame editorial bias for the huge quantitative disparity between scientific articles supporting evolution and their own work. However, studies show that only a few creationists have submitted articles to scientific journals (Scott & Cole 1985), and those that were submitted were uniformly rejected for not adhering to the most rudimentary standards of scientific research (Cole & Scott 1982; Taylor 1992).

[17]For example, Steven Austin (chair of ICR's Department of Geology) has produced a college-level textbook titled *Grand Canyon: Monument to Catastrophe* (Austin 1994) that states "the real battle in regard to understanding the Grand Canyon is founded not just upon Creation and Noah's Flood versus evolution, but upon Christianity versus humanism." Similarly, ICR's *Science, Scripture, and the Young Earth* (Morris & Morris 1989) claims that "the data of geology ... should be interpreted in light of the Scriptures, rather than distorting Scripture to accommodate current geological philosophy." Henry Morris believes that the scientific study of nature is subordinate to theology and Morris' God and that his God's word has priority over that of people: "If the Bible teaches it, that settles it, whatever scientists might say, because it's the word of God," (quoted in Donaldson 1988). Morris believes that

used as an expert witness for the State to show the "enlightened and scientific attitude of today's creationists," claimed that demonic possession, exorcism, occultism and UFOs are "a satanic manifestation in the world for the purpose of deception" (cited in Nelkin 1982). Another expert witness for the State claimed that 1) interstellar space is littered with genes that can be carried by comets and seed life on Earth, and 2) insects may be more intelligent than humans, but "they're not letting on." Even that witness admitted that no rational scientist could believe that Earth was less than a million years old, and that belief in a separate ancestry for apes and man was "clap trap" (Nelkin 1982).[18]

Overton concluded that creationists are not employed by leading scientific research institutions. Zharold Morowitz, a biophysicist at Yale University, said he could not name a creationist who held a position at an Ivy League university, and emphasized Overton's conclusion by adding that (Gieryn et al. 1985)

> *I can't give you the name of an Ivy League school, graduate school, or journal which houses a flat earth theorist either.*

Do Creationists Have Scientific Evidence To Support Their Claims?

McLean v. Arkansas Board of Education did not focus on the comparative technical merits of creationism and evolution. Such a strategy would have labeled creationism a science—albeit a weak one—and therefore a reasonable source—again, albeit a weak one—for meaningful explanation of origins and other scientific claims. The plaintiffs knew that it was imperative that creationism be denied the status of even a weak science; otherwise, proposals such as Act 590 could not be judged unconstitutional. The plaintiffs built their case by arguing that there is no valid evidence for creationists' claims, that there are no scientifically meaningful ideas within the framework of creationism, and that creationists' claims are not scientifically legitimate. The plaintiffs also questioned creationists' ability to make scientifically meaningful interpretive statements about evolutionary theory. Overton agreed with the plaintiffs; he was not convinced by creationists' arguments against the empirical adequacy of evolutionary theory, and dismissed the claims of creationists by noting the lack of scientific evidence for their claims:

> *The arguments asserted by creationists are not based upon new scientific evidence or laboratory data which has been ignored by the scientific community ... [The claims of creationists about the existence of present life forms are] simply a hodgepodge of limited assertions, many of which are factually inaccurate.*

Creationists were unable to make a convincing argument because they lacked empirical evidence (e.g., explanations, predictions) from which to argue scientific reasonableness. Overton noted that experimental/observational work is virtually absent from creationist literature and that creationism:

> *proceeds by showing evolution (specifically Darwinism) wrong, rather than by showing Creationism right*

Overton concluded that creationists' methodology is:

> *indicative that their work is not science.*

Later Overton added that (Wells 1984):

> *I didn't have to define what creationism was—it was all down in black and white [in the law] ... Creation science ... is simply not science.*

Overton flunked "creation science" on all counts.[19]

Overton's Decision: A Summary

Overton's decision, which he made early in the trial (Figure 5.3) and cited the *Epperson*, *Willoughby*, and *Wright* decisions (Moore 1998c, 1999a), included several key features:[20]

- The Arkansas "balanced treatment" statute is unconstitutional because it violates the First Amendment.
- Creationists cannot display a scientific *ethos* because, unlike scientists, creationists are not involved in a disinterested search for scientific knowledge.
- Creationism subverts rather than contributes to natural order.
- Creationism fails as science because creationists are not scientists and do not function like scientists.
- Creationism is not science; rather, it is religion masquerading as science.
- Creationism has no scientific significance. Overton was unequivocal:

  > *Creation science has no scientific merit or educational value as science ... creation science is not science ... Since creation science is not science, the conclusion is inescapable that the only real effect of Act 590 is the advancement of religion.*

McLean v. Arkansas Board of Education was not a trial about the adequacy of evolutionary theory; indeed, creationists' arguments for creationism's superiority over evolution were irrelevant. Rather, *McLean v.*

creationism is an excellent "ministry" for leading students to Christ (Larson 1989).

[18]Virtually all of the geologists recruited to creationism have deserted the belief after being exposed to scientific evidence (Wise 1998; Numbers 1992).

[19]Overton was criticized for his emphasis on the nonfalsifiability of some creationists' claims to deny their scientific merits. Indeed, Overton's decision neglected the strongest argument against creationism—namely, that many of the claims of creationists *have* been falsified (Lauden 1983; Numbers 1992).

[20]One month after issuing his decision, Overton announced that he'd decided "fairly early on" in the trial how he would rule: "I would say we weren't far into that trial before the attorney general (Steve Clark) was rearranging the chairs on the deck of the *Titanic* ... It was clear cut ... The ACLU lawyers ran through the State like the British took the Argentines"(Wells 1984).

Made Decision on Ruling In 'Creation-Science' Case Early, Overton Indicates

By GEORGE WELLS
Gazette Staff

Federal Judge William R. Overton indicated Thursday that he decided "fairly early on" in the "creation-science" trial how he was going to rule.

"I would say we weren't far into that trial before the attorney general [Steve Clark] was rearranging the chairs on the deck of the Titanic," he told liberal arts faculty meeting at the University of Arkansas at Little Rock.

Judge Overton also said it was easy to reach his ultimate decision to strike down Act 590 of 1981, which would have required the public schools where evolution is taught to give "balanced treat-

pick and choose what cases he tries. When it came time to give evidence of the scientific evidences supporting 'creation-science,' the creationists came up a little short."

'Very Little Understanding'

Judge Overton also warned against the inherent dangers of teaching creationism in public schools, at least in science or related studies.

"One thing that became clear to me after the trial," he said, "is that the general public has very little understanding of what 'creation-science' is. • • • I believe a lot of these people would really be amazed if they knew what 'creation-science' was really about • • •

—Staff Photo

JUDGE WILLIAM R. OVERTON

the "lack of understanding of the Constitution and a lack of understanding of what this country is all about and what we're about."

The judge said one writer summed it up, probably inadver-

Figure 5.3. Judge William Overton made his decision fairly early in the trial of *McLean v. Arkansas Board of Education*. In this article, which appeared in the 4 February 1984 issue of the *Arkansas Gazette*, Overton warned against the dangers of teaching creationism in public schools.

Arkansas Board of Education was about the establishment of religion and the validity of "creation science" as science. *McLean v. Arkansas Board of Education* established that creationists could not make scientifically reasonable, positive claims about the evidential grounds, methods, or values of so-called "creation science." This left creationists with nothing scientific to discuss.

McLean v. Arkansas Board of Education doomed future legislative initiatives involving "creation science" (if and when they reach litigation) because it destroyed creationists' arguments about the credibility of creation science (Taylor 1992). An ACLU attorney proclaimed that "the case will deal creation science a fatal blow" (Cearley, see Federal judge denies, 1982). Indeed, creationism legislation declined after *McLean v. Arkansas Board of Education*; fewer bills were introduced, and none passed (Heard 1982). Overton, who had read 60 to 65 creationist texts during his decision-making process, later warned against the teaching of creationism in public schools (Wells 1984):

> *The general public has very little understanding of what "creation science" is. [Most] people would really be amazed if they knew what "creation-science" is really about. [Much of the material] is more like propaganda than educational material.*

Overton was also discouraged by the (Wells 1984):

> *lack of understanding of the Constitution and a lack of understanding of what this country is all about and what we're about . . . Any time the state adopts a religious view, it degrades all citizens who do not subscribe to that particular religion . . .*

adding that one writer summed it up by saying that:

> *public schools ought to teach religion—my kind.*

A month after Overton's ruling (on 4 February), Attorney General Clark recognized the strength of Overton's ruling and decided to cut his losses. Harshly criticized for his handling of the suit and convinced that the law was unconstitutional, Clark decided not to appeal Overton's decision (Heard 1982; Novik 1983).[21]

[21]Overton, when he heard lawyers say that it was possible to draft a creationist law that would meet constitutional standards, said that "all I can say . . . is that it would take a better lawyer than me to do that" (Wells 1984).

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After Overton's ruling, the ACLU asked Overton to award $1.4 million in attorneys' fees. Overton reduced the award to $357,768. Clark appealed the award, but the award was upheld (along with 8.75% interest) by the U.S. Eighth Circuit Court of Appeals. The *Arkansas Gazette* estimated that the legal costs surrounding Act 590 cost taxpayers almost $1,000,000. It also offered some advice (Putting "creation-science" to rest 1984):

> *Arkansas has been given an expensive lesson in its dalliance with "creation science," and legislatures and governors in the future would be well-advised to shun those creationists who would lead the state astray.*

Although the case concerning Act 590 in Arkansas was permanently closed, not everyone took the advice of the *Arkansas Gazette*. Despite Overton's ruling, the "balanced treatment" issue remained alive. The new stage was Louisiana, and the new actor was a young biology teacher named Don Aguillard.

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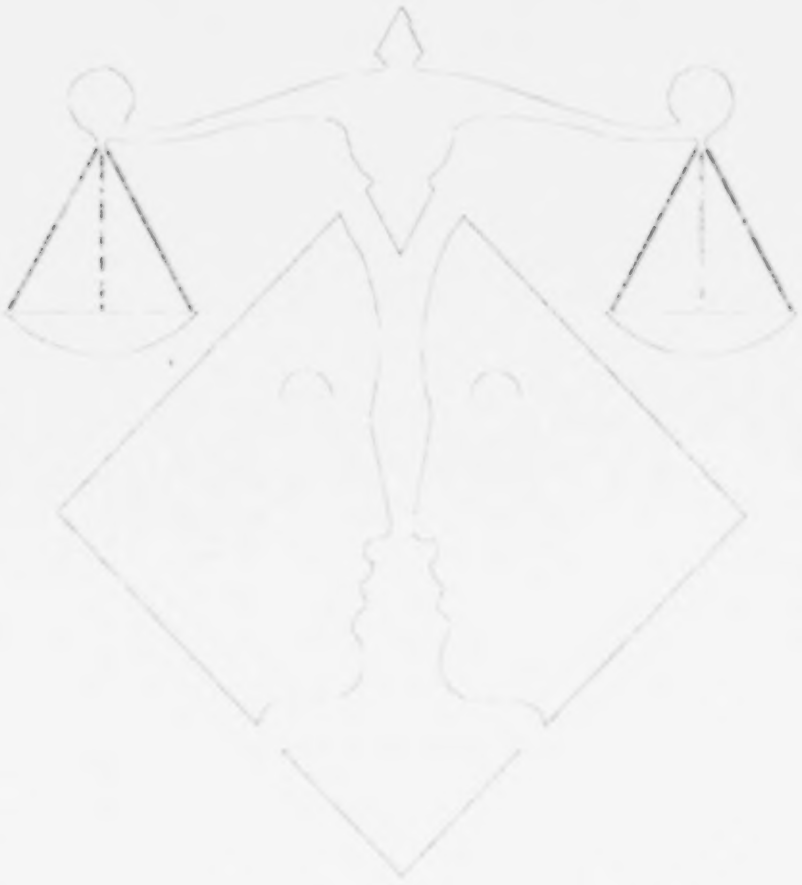

There is no significant scientific doubt about the close evolutionary relationships among all primates or between apes and humans. The "missing links" that troubled Darwin and his followers are no longer missing. Today, not one but many such connecting links, intermediate between various branches of the primate evolutionary family tree have been found as fossils. The linking fossils are intermediate in form and occur in geological deposits of intermediate age. They thus document the time and rate at which primate and human evolution occurred.
—The National Academy of Sciences, 1984

The movement is far too widespread and varied, and there are too many people involved (including thousands of committed scientists), for the evolutionists ever to regain the obsequious submission of the public which they used to enjoy and abuse.
—Henry Morris, 1984

6

It Seems Only Clear...
Demanding "Balanced Treatment"

Judge William Overton's decision in *McLean v. Arkansas Board of Education* destroyed creationists' hopes of using "creation science" as a means of forcing their religious agenda into public schools (Moore 1999b). Not surprisingly, creationists attacked Overton's decision; Duane Gish of the Institute for Creation Research (ICR) said Overton was biased, and Wendell Bird—an architect of ICR's "equal time" policy on which the Arkansas statute was based—claimed that Overton's decision was "constitutionally erroneous and factually inaccurate." ICR's Henry Morris attacked Overton as "biased" and claimed that Arkansas Attorney General Steve Clark did a poor job of defending the law.

Although *McLean v. Arkansas Board of Education* was a stunning defeat for creationists, they did not give up. Rather, they turned their attention to Louisiana, which also had a "balanced treatment" statute (Moore 1999a).[1] Whereas the Arkansas "balanced treatment" statute had linked "creation science" to the study of a biblically inspired list of creation events (e.g., a worldwide flood), the Louisiana statute lacked religious references. Moreover, the Louisiana statute defined creation science as "scientific evidence for creation and inferences from those scientific evidences" (see Larson 1989 and references therein), but it did not list those inferences (as Act 590 had), nor did it define *creation* or mention *God*. The constitutionality of the Louisiana law wasn't covered by the *McLean v. Arkansas Board of Education* decision (see Chapter 5), for the Louisiana law did not include the traditional biblical features that were prominent in the Arkansas law (e.g., the Genesis-based definition of creation science). Bird demanded a trial on the scientific merits of creation science, arguing that such a trial was justified because Louisiana's "balanced treatment" legislation 1) was a substantially different statute than the Arkansas law, 2) was based on a different definition of "creation science" than was the Arkansas law, and 3) had a different legislative purpose than did the Arkansas law.

The Origin of Louisiana's Balanced-Treatment Law

Louisiana's "balanced treatment" legislation was introduced by Senator Bill Keith on the opening day of the 1981 legislative session.[2] Keith, who disliked evolution because evolution was contrary to his religious beliefs, wanted to narrow the science curriculum. Keith's bill tried to do this—in the name of "academic freedom"—by 1) requiring the development of curriculum guides and resource services for creation science, 2) restricting membership on the "research services panels" to creation scientists, 3) banning school boards from discriminating against anyone who "chooses to be a creation-scientist" (while failing to protect those who choose to teach evolution or who refuse to teach creation science), and 4) banning the teaching of evolution in public elementary and secondary schools unless it was accompanied by instruction about "creation science."

During legislative hearings, Keith produced an "expert" on creation science (Edward Boudreaux) who admitted that creation science included belief in the existence of a supernatural creator. Boudreaux claimed that there were "something like a thousand [creation scientists] who hold doctorate and masters degrees in all areas of science who are affiliated with either or both the Institute for Creation Research and the Creation Research Society." Besides Senator Keith, other vocal legislators revealed their religious intentions;

[1]Demands for "equal time" and "balanced treatment" harkened to beliefs of William Jennings Bryan, a primary player in the Scopes' "Monkey Trial" of 1925 (Moore 1998a). Largely ignored in the coverage of that trial (and ever since) was the fact that Bryan was not against the teaching of evolution, provided humans were exempt from the process, that it was taught as a theory rather than as a fact, and that if equal time were given to other options such as creationism (Cornelius 1991).

[2]Keith had introduced a scientific creationism bill in 1980, but it died in committee. Keith's 1981 attempt was based on a version of Paul Ellwanger's proposal that was adopted in Arkansas (Moore 1999a, b). Keith subsequently founded the Creation Science Legal Defense Fund (later the Academic Freedom Legal Defense Fund; see Eve & Harrold 1991).

for example, the bill was amended so that teachers could refer to the Bible and other religious texts to support the creation science theory. Another legislator (Representative Jenkins) argued that the existence of God is "a scientific fact." Keith urged his colleagues to support the legislation by telling them that (Larson 1989):

> *Evolution is no more than a fairy tale about a frog that turns into a prince. We force our children to go to school, and when they get there we teach them man came from monkeys.*

In effect, Keith's statute required that the biblical version of creation be taught side-by-side with evolution in Louisiana's public schools (the Louisiana statute disguised the biblical version of creation with arguments for origins at some time of some thing "by complex initial appearance"). Although the statute did not require the teaching of either subject unless the other was taught, each—when taught—had to "be taught as a theory, rather than as proven scientific fact."

The Louisiana House of Representatives passed the "balanced treatment" bill by a vote of 71-19, and on 6 July Keith distributed ICR materials to House members claiming that creationism is "pure science" that "has no missing links." The Senate passed the legislation by a vote of 26-12. Although Republican Governor David Treen had reservations about the legislation, he signed the bill two weeks later. In Louisiana, balanced treatment was the law.

Wendell Bird, recently excluded from *McLean v. Arkansas Board of Education* (Moore 1999b), wanted the statute to be enacted immediately. To accomplish this, Bird went to Louisiana, where on 2 December 1981 in Federal Court in Baton Rouge, he sought (as *Keith v. Louisiana*, on behalf of Senator Keith and 54 other plaintiffs) to compel educational agencies to comply with the newly signed law (One case, 1987):

> *It seems only clear and reasonable that if one science, evolution, is taught, another—that of creation science—should be also.*

The next day, the ACLU—on behalf of 26 organizational and individual plaintiffs (including the National Association of Biology Teachers, the National Science Teachers Association, and the American Association for the Advancement of Science)—challenged the constitutionality of the law (*Aguillard v. Treen*). Serving as the nominal plaintiff was Don Aguillard, a biology teacher at Acadiana High School in Lafayette, Louisiana.[3] The ACLU claimed that the law:

> *does not have any secular legislative purpose in that creation-science is inherently religious, it is religious apologetics calculated to advance a particular religious belief, it is not science and it has no educational merit.*

[3]Aguillard had been a biology teacher at Acadiana High School since 1975. In 1986, Aguillard became an assistant principal at the school.

Aguillard, who had balked at the "creationism act" requiring science teachers to discuss biblical versions of creation if they discussed evolution (One case 1987), added a more pragmatic concern:

> *We just don't have the money to be spending on bad science.*

Aguillard realized the damage the law would inflict on students and science education. Indeed, some biology teachers were prepared to not teach evolution rather than give equal time to creationism (Aguillard 1989). Like John Scopes, Susan Epperson, and others before him, Aguillard was harshly criticized; supporters of creation science viewed his position as a threat to their religious beliefs (Aguillard 1989; for more about Aguillard, see Appendix 6).

Wendell Bird was deputized a special attorney general for both cases (*Keith v. Louisiana, Aguillard v. Treen*). The ACLU's defense followed the successful strategy that it used in *McLean v. Arkansas Board of Education*, claiming that the Louisiana law advanced religion (Moore 1999b). When *Keith v. Louisiana* was dismissed in June of 1982, all attention focused on *Aguillard v. Treen*.

In *Aguillard v. Treen* (634 F. Supp. 426 [ED La. 1985]), the constitutionality of Keith's "balanced treatment" statute was challenged by Louisiana parents, teachers, and religious leaders in U.S. District Court. Judge Adrian Duplantier, acting without a trial, ignored the scientific aspects of the case, focusing instead on the argument that the teaching of "creation science" requires teaching the existence of a divine creator (Shermer 1997). On 10 January 1985, Duplantier ruled that the legislature wrongly dictated "to the public schools not only that a subject must be taught, but also how it must get taught" and that the statute violated the Establishment Clause of the First Amendment of the U.S. Constitution. Duplantier's ruling, which prohibited the state of Louisiana from implementing the law, sided with the appellees, noting that 1) there can be no valid secular reason for prohibiting the teaching of evolution, 2) "the teaching of 'creation science' and 'creationist,' as contemplated by the statute, involves teaching 'tailored to the principles' of a particular religious sect. . . " (citing *Epperson v. Arkansas*), 3) the statute's avowed purpose of protecting academic freedom was inconsistent with the statute's legislative history and its requirement for the teaching of creation science whenever evolution is taught, and 4) creationism is a religious belief.[4] Duplantier found the case against the balanced treatment law so convincing that no conceivable trial testimony could save the law:

[4]Among those urging affirmation were the American Federation of Teachers, Americans United for Separation of Church and State, and the National Academy of Sciences. Louisiana officials, charged with implementing the Act, defended the statute on the ground that it had a secular interest: namely, academic freedom.

> *There is no doubt that the defendants could produce a great deal of evidence on collateral issues, as did the proponents of the similar Arkansas statute. We are convinced that whatever that evidence, it could not affect the outcome.*

Five days after Duplantier's decision, the state filed notice of its intention to appeal the decision.[5] The appeal in U.S. District Court did not involve a trial. The appellate panel of the Court, which consisted of three judges, unanimously affirmed Duplantier's ruling:

> *The Act violates the Establishment Clause of the First Amendment because the purpose of the statute is to promote a religious belief . . . We must recognize that the theory of creation is a religious belief. Nor can we ignore the fact that through the years religious fundamentalists have publicly scorned the theory of evolution and worked to discredit it.*

Bird then petitioned for a hearing by the entire 15-member Court. On 8 July 1985 the full U.S. Court of Appeals for the Fifth Circuit—noting the influence of the Scopes legacy in the case[6]—affirmed Duplantier's ruling (by an 8 to 7 margin, again without a hearing), declaring that the Louisiana legislature's actual intent was:

> *to discredit evolution by counterbalancing its teaching at every turn with the teaching of creationism, a religious belief.*

The ACLU again proclaimed that the controversy was over, as it had after the *Scopes*, *Epperson*, and *McLean* decisions (Moore 1998a-c, 1999b). Louisiana ACLU Executive Director Martha Kegel summed up their feelings:

> *This is the death knell for the entire creation science movement across the country.*

Although the dissenting opinion by Judge Thomas Gee ("there *are* two bona fide views" of origins) was the first published judicial support for creationist claims since the Scopes trial (Larson 1989), the case wasn't over, for when a federal court rules that a state law is unconstitutional, by "mandatory jurisdiction," the U.S. Supreme Court must hear the case (Shermer 1997). At least four of the nine Supreme Court Justices agreed that the issue was substantial, and by the "rule of four" agreed to hear the case (Shermer 1997). The evolution/controversy was again headed to the U.S. Supreme Court.

The Supreme Court Decides the Fate of "Balanced Treatment"

The validity of the "balanced treatment" strategy was decided in 1987 by the U.S. Supreme Court in *Edwards, Governor of Louisiana, et al. v. Aguillard et al.* (No. 85-1513, 482 US 578; 107 S. Ct. 2573; 1987 US Lexis 2729; 96 L. Ed. 2d 510; 55 U.S.L.W. 4860).[7] In that trial, which occurred on 10 December 1986, the state's case for "balanced treatment" was presented by Wendell Bird; Aguillard was defended by Jay Topkis, a volunteer for the ACLU. When Supreme Court Justice Stevens asked "What . . . was the factual issue that had to be resolved?", Bird told the court that:

> *Your honor, the definition of "creation science" is one very important factual issue, what the statute's about.*

Although Bird admitted that "some legislators had a desire to teach religious doctrine in the classroom," he added that this group was a "small minority." He then argued that the law had a primary secular purpose based on "fairness" and the "academic freedom" of students. Topkis responded:

> *[What the legislators said at the time they enacted the statute] is nothing but religion . . . We can go through this entire record without finding anybody talking about a secular purpose.*

Noting that creation science and evolution "reflect two separate positions," Bird argued that:

> *The Louisiana legislature determined that students were not receiving all of the scientific information on the subject*

and that:

> *Teaching creation science does not entail, necessarily, the teachings of [a personal God] . . . In other words, with creation science consisting of scientific evidence, such as the abrupt appearance of complex life in the fossil record, the systematic gaps between fossil categories, the mathematical improbability of evolution . . . in none of that is there any concept of a creator, and certainly no concept of Genesis. That is scientific data.*

Bird was repeatedly interrupted by questions from the justices. Topkis scoffed at Bird's argument by comparing him to Tweedledum in *Alice in Wonderland* (One case, 1987):

> *[Bird] wants words to mean what he says they mean, and that didn't fool Alice—and I doubt very much that it will fool this court . . . This statute calls for the very antithesis of academic freedom.*

On 19 June 1987 the U.S. Supreme Court ruled that Don Aguillard did not have to teach creation science in his classes. The court, noting that evolution has been "historically opposed by some religious denominations," affirmed (in a 7-2 decision) that 1)

[5] At this point, the case became *Edwards v. Aguillard*, since the state and governor (Edwin Edwards) were now the plaintiffs.

[6] The appeals court noted that "The Act continues that battle that William Jennings Bryan carried to his grave" and that "the case comes to us against a historical background that cannot be denied or ignored" (Numbers 1992).

[7] The *Edwards v. Aguillard* ruling by the U.S. Supreme Court can be accessed at *http://cns-web.bu.edu/pub/dorman/edwardsvaguillard.html* or in Irons and Guitton (1993). The ruling cites a variety of related issues and court opinions, including those involving "meditation periods" in public schools, posting of the Ten Commandments, opening a legislative session with a prayer by a chaplain paid by the State, etc. The Appellants agreed not to implement the Creationism Act pending the outcome of this litigation.

it is unconstitutional to mandate or advocate creationism in public schools, for creationism is inherently a religious idea, 2) Louisiana's "balanced treatment" and "equal time" law was unconstitutional because it impermissibly endorses religion by advancing the religious belief that a supernatural being created humankind (i.e., it violated the Establishment Clause), 3) banning the teaching of evolution when creation science is not also taught undermines a comprehensive science education, 4) the contention "a basic concept of fairness" for requiring the teaching of creation science is "without merit," and 5) the Act discriminates for the teaching of creation science and against the teaching of evolution by requiring that curriculum guides be developed and resource services be supplied for teaching creationism but not for teaching evolution. The Court did not mince words, noting that the statute was:

> *facially invalid as violative of the Establishment Clause of the First Amendment, because it lacks a clear secular purpose.*[8]

The Court also noted that it was not happenstance that the legislature required the teaching of a theory that coincided with a particular religious view, noting that the creationists:

> *have identified no clear purpose for the Louisiana Act . . . The preeminent purpose of the Louisiana legislature was clearly to advance the religious viewpoint that a supernatural being created humankind . . . [The] purpose of the Creationism Act was to restructure the science curriculum to conform with a particular religious viewpoint . . . The goal of providing a more comprehensive science curriculum is not furthered either by outlawing the teaching of evolution or by requiring the teaching of creation science . . . Requiring schools to teach creation science with evolution does not advance academic freedom.*

The Supreme Court ruled that the law's requirement that creationism be taught "advances a religious doctrine" and "seeks to employ the symbolic and financial support of government to achieve a religious purpose." Again invoking the Scopes legacy, *Time* magazine described the *Edwards v. Aguillard* decision as "a major setback for fundamentalist Christians" (Sanders 1987).

As a result of the *Edwards v. Aguillard* decision, attempts to get "equal time" for creationism have dwindled since 1987 (Scott 1994). Ironically, however, the *Edwards v. Aguillard* decision encouraged many creationists. Although fundamentalists lost *Edwards v. Aguillard*, they were encouraged by a part of Justice Brennan's majority opinion:

> *Teaching a variety of scientific theories about the origins of humankind to school children might be validly done with the clear secular interest of enhancing the effectiveness of science instruction.*

Similarly, Justice Scalia's dissenting opinion (which Justice Rehnquist joined)[9] accepted creationists' claims at face value and invoked the Scopes legend when concluding that:

> *the people of Louisiana, including those who are Christian fundamentalists, are quite entitled, as a secular matter, to have whatever scientific evidence there may be against evolution presented in their schools, just as Mr. Scopes was entitled to present whatever scientific evidence there was for it.*

Scalia also noted that:

> *The body of scientific evidence supporting creation science is as strong as that supporting evolution. In fact, it may be stronger. Evolution is merely a scientific theory or "guess." Creation science is educationally valuable. Students exposed to it better understand the current state of scientific evidence about the origin of life . . . Although creation science is educationally valuable and strictly scientific, it is now being censored from or misrepresented in the public schools . . . Teachers have been brainwashed by an entrenched scientific establishment composed almost exclusively of scientists to whom evolution is like a "religion." These scientists discriminate against creation scientists so as to prevent evolution's weaknesses from being exposed.*

Although both Justices ignored the fact that there are no reputable alternatives to evolution as a scientific explanation, they did suggest that alternative theories could be taught in public schools.

In light of the *Edwards v. Aguillard* decision, as well as to avoid expensive legal fights involving challenges to the Establishment Clause, creationists have adopted yet another new strategy: to sound less like religion—that is, without mentioning "creationism" or "creator"—they have demanded equal time to teach the "evidence *against* evolution" and, correspondingly, that evolution did not occur (Scott 1994). This strategy, which resembles pre-*Edwards* creationism, typically involves claims that radiometric dating is unreliable; that it is impossible that life could have originated at random; that there are no transitional life forms; and that evolution is disproved by the second law of thermodynamics. To create the illusion of scholarly support for these and similar ideas, creationists have developed reference materials filled with scientific jargon and buzzwords (e.g., "critical thinking") without significant theoretical or

[8]This decision came to be known as "the Edwards restriction." Today, this restriction is the controlling legal position on attempts to require the teaching of creationism in public schools. Such attempts are unconstitutional.

[9]Scalia and Rehnquist were appointees of President Ronald Reagan, who supported "balanced treatment" (Moore 1999b). Indeed, Reagan supported school prayer, questioned the theory of evolution, supported biblical creationism, repeatedly complained that "I don't believe we should ever have expelled God from the classroom," and promised to appoint federal judges willing to include religion in public education (Larson 1989). Bill Keith, the sponsor of Louisiana's "balanced treatment" legislation, claimed that God had delayed the lawsuit so that President Reagan could appoint more judges to the bench (Reagan had appointed 6 of the 15 judges in the Fifth Circuit Court).

intellectual underpinning.[10] These strategies, combined with euphemisms to hide their intent (e.g., "intelligent design," "abrupt appearance theory," "initial complexity"), have created significant inroads for creationists in public schools.

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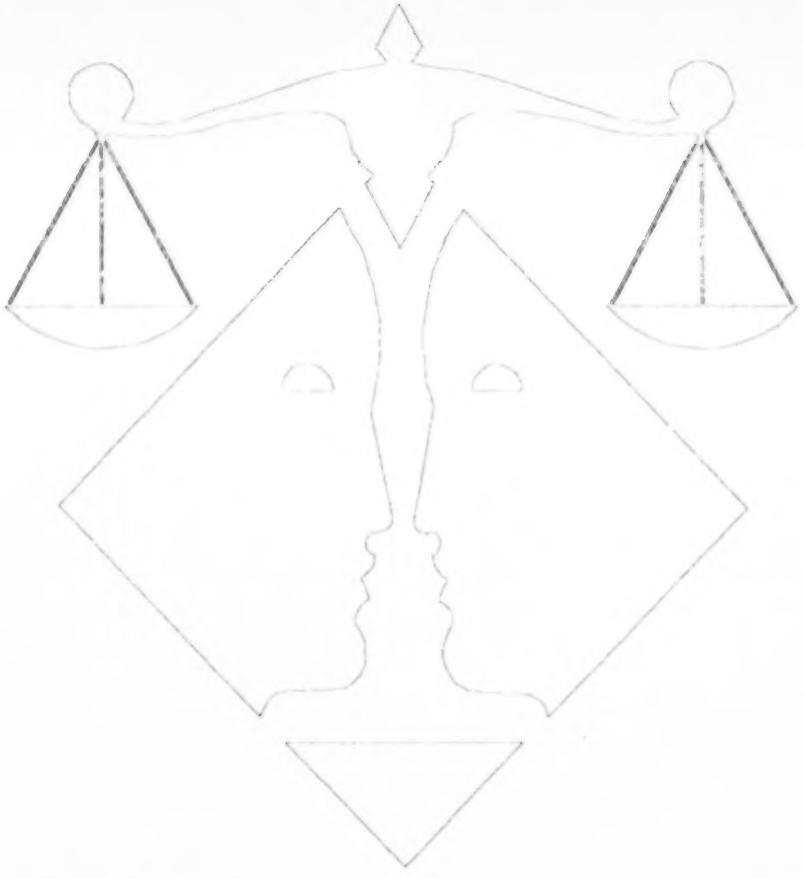
[10]Among the most popular of these materials is *Of Pandas and People* (Davis & Kenyon 1989), which was published by a Texas-based creationist group called Foundation for Thought and Ethics. This book, which has been used in many schools as a supplement to biology books, claims to present a balanced treatment of evolution and "intelligent design theory" (see discussion in Scott 1994).



Are we to have our children know nothing about science except what the church says they shall know?
—Dudley Field Malone, 16 July 1925

This is the Bible, buddy. I intend to defend it.
—Bruce Bennett, Attorney General of Arkansas, 1966

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7

He Who Troubles His Own House...
The Lingering Impact of *Inherit the Wind*

Inherit the Wind is one of the most popular plays and movies in American history. It appears regularly on Broadway and television, is available as a rental at most video stores, and is a favorite production of amateur theaters across the country. Indeed, *Inherit the Wind* is performed almost every night somewhere in the world.

Inherit the Wind has also been used extensively as an educational film in science, history, and social studies classes to study the Scopes trial; I have vivid memories of spending most of a week's worth of classes in high school watching and discussing *Inherit the Wind*. At the time, I knew relatively little about the Scopes trial or the issues surrounding the evolution/creationism controversy, but for many years thereafter I assumed that the film was factually accurate. Others have made similar assumptions. For example, I overheard three conversations about *Inherit the Wind* at the 1998 annual meeting of the National Association of Biology Teachers; each of these conversations was based on *Inherit the Wind* being an accurate portrayal of the Scopes trial. Perhaps these perceptions (i.e., that *Inherit the Wind* is an accurate historical account of the Scopes "monkey trial") are understandable; after all, the book *Inherit the Wind* claims to describe "the most explosive trial of the century," and posters and other advertisements link the movie version of *Inherit the Wind* with the Scopes trial by announcing that the movie is "All About the Famous 'Monkey Trial' That Rocked America!" (Figure 7.1). Although *Inherit the Wind* includes some historically accurate moments,[1] there are many major inaccuracies. The historical inaccuracy of *Inherit the Wind* is noted prominently in the playwrights' note:

> Inherit the Wind *is not history . . . Only a handful of phrases have been taken from the actual transcript of the famous Scopes Trial . . .* Inherit the Wind *does not pretend to be journalism. It is theater. It is not 1925.*

Despite this and other disclaimers, many teachers continue to use *Inherit the Wind* to teach students about the Scopes trial and the creationism/evolution controversy. Similarly, historians who drafted *National Standards for United States History* recommend *Inherit the Wind* as a tool for understanding Bryan's thinking and fundamentalists' ideas (see Numbers 1998). This is why *Inherit the Wind* continues to supply most people's views of the Scopes trial.

In this paper I summarize the major differences between what is portrayed in *Inherit the Wind* and what happened in Dayton, Tennessee in 1925 at John Scopes' trial. My analysis of *Inherit the Wind* is based on the widely available book (Lawrence & Lee 1955) and video of *Inherit the Wind* that is distributed by *MGM Home Entertainment* (©1993). Analyses of the Scopes trial and its major players are presented elsewhere (e.g., Larson 1997, Moore 1998, Cornelius 1997, and references therein).[2]

The Stage Play

Inherit the Wind was written in 1950 by Jerome Lawrence and Robert E. Lee as a response to the threat to intellectual freedom presented by the anti-Communist frenzy of the McCarthy era. McCarthyism, then safely a generation in the past and no longer considered to be an ongoing threat, was used by Lawrence and Lee to explore the anxiety and possible consequences of such social upheavals.

[1]These moments include Darrow's condemnations of anti-intellectualism, the testimony of Scopes' student (1:00:10), an exchange between Darrow and Raulston that produced Darrow's contempt citation (1:20:00) and subsequent apology (1:26:45), portions of Darrow's examination of Bryan, Darrow's being from Chicago (46:00), the trial's regionalism and nationalism (18:00, 27:10, 42:02, 1:00:10), Bryan's candidacy for President of the United States (7:44, 17:07), Scopes never taking the witness stand, Bryan's fighting for "common people" (16:05), Darrow's support for Bryan as president (30:23), Scopes being liked by his students (28:25), the extreme heat during the trial (17:19, 33:02), Bryan being from Nebraska (34:10), Bryan's belief in majoritarianism (47:54, 1:16, 08), and the appeal of Scopes' conviction to the state (Tennessee) Supreme Court (1:59:11). Times listed here and elsewhere in this paper are measured from the start of the movie (i.e., the scene showing the clock on the Hillsboro Courthouse), not the start of the theatrical "trailer" that precedes the movie on the MGM video.

[2]Additional information about *Inherit the Wind* is available at *http://emporium.turnpike.net/c/cs/wind.htm, http://www.dimensional.com/~vandl/scopes.htm* and *http://csuchico.edu/hfa/spot212hxb.html*.

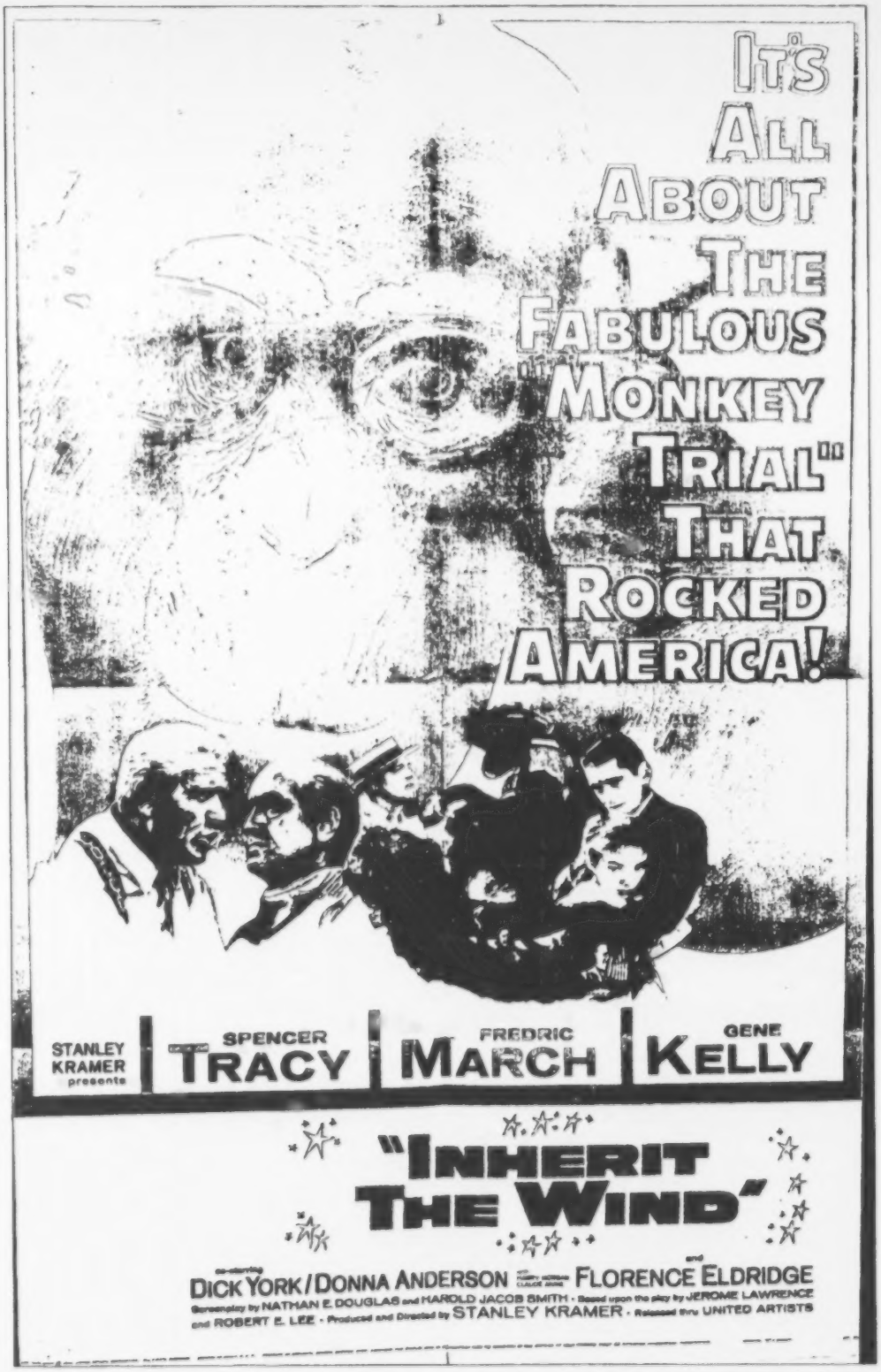
IT'S ALL ABOUT THE FABULOUS "MONKEY TRIAL" THAT ROCKED AMERICA!
STANLEY KRAMER presents
SPENCER TRACY
FREDRIC MARCH
GENE KELLY
"INHERIT THE WIND"
DICK YORK / DONNA ANDERSON
and FLORENCE ELDRIDGE
Screenplay by NATHAN E. DOUGLAS and HAROLD JACOB SMITH · Based upon the play by JEROME LAWRENCE and ROBERT E. LEE · Produced and Directed by STANLEY KRAMER · Released thru UNITED ARTISTS

Figure 7.1. This poster, which announced the 1960 premiere of *Inherit the Wind*, convinced people that the movie was about the Scopes Trial. Today, *Inherit the Wind* continues to supply most people's views of that trial.

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Although Lawrence and Lee completed the stage play of *Inherit the Wind* in 1950, it did not debut until January 10, 1955 at the Dallas Theater. It received rave reviews; for example, the *Newark Evening News* (4/22/55) described *Inherit the Wind* as "one of the season's major achievements in sheer satisfaction." Scopes declined invitations to see the play (Scopes & Presley 1967), but that didn't stop it from becoming a box-office success: by the end of its Broadway run in 1957, the long-running, three-act play (on which the film version would be based) was the most successful and longest running drama in American history.

The Movie

The movie version of *Inherit the Wind* debuted in Dayton, Tennessee on July 21, 1960 at a celebration to commemorate the 35-year anniversary of "Scopes Trial Day." Prompted by urgings from his wife Mildred, Scopes attended the premiere and was given a parade and key to the city (Scopes was the only surviving principal of the trial who attended). While in Dayton, Scopes was described as "the devil"; Scopes was convinced that if his trial had been held in 1960, "the verdict would have been the same" (Scopes & Presley 1967). The movie, which is 127-minutes long and reached theaters nationwide in October, 1960, was directed by Stanley Kramer. Its cast of characters included:

Spencer Tracy, who played Henry Drummond (the character representing Clarence Darrow, a famous trial lawyer who specialized in defending underdogs),
Fredric March, who played Matthew Harrison Brady (the character representing William Jennings Bryan, the Great Commoner, tent revivalist, and three-time Democratic nominee for President),
Gene Kelly in a rare dramatic role as E.K. Hornbeck (the character representing journalist H.L. Mencken),
Florence Eldridge, who played Sara Brady (the character representing William Jennings Bryan's wife),
Henry Morgan, who played the trial's judge (the character representing Judge John T. Raulston),
Dick York, who played Bertram T. Cates (the character representing John Scopes),
Donna Anderson, who played Rachel Brown (Scopes' fiancée), and
Claude Akins, who played Reverend Jeremiah Brown.

The movie's screenplay, which was produced by Nathan E. Douglas and Harold J. Smith, downplayed the intellectual and theological issues of the trial while playing up the trial's circus-like atmosphere.

Inherit the Wind was a critical and commercial success. For example, the October 12, 1960 issue of *The New York Times* described *Inherit the Wind* as "one of the most brilliant and engrossing displays of acting ever witnessed on the screen." The movie garnered four Academy Award nominations, including Best Actor (Tracy) and Best (Adapted) Screenplay. In late 1960, *Inherit the Wind* became the world's first "in flight" movie when TWA used it to lure first-class passengers. Among the film's many highlights is Tracy's 11-minute summation, which was filmed in a single take to heighten the tension of the movie's climax.[3]

How Inherit the Wind *Differs from Events at the Scopes Trial*

Readers of *Inherit the Wind* often overlook the authors' disclaimer in the preface: "*Inherit the Wind* is not history" (Lawrence & Lee 1955). John Scopes himself noted that the filmmakers took several liberties with "the facts of the real trial."[4] Indeed, the famous movie version of *Inherit the Wind* differs significantly from events that occurred at John Scopes' trial:

Movie: The trial originates in Hillsboro (Dayton, Tennessee), a small southern town (0:00). The ACLU is not mentioned in the play or film.
Trial: The Scopes trial originated in New York City when the ACLU placed an ad in Tennessee's newspapers offering to pay the expenses of any teacher willing to test the Butler Law.

Movie: A preacher, three businessmen, and a photographer march through Hillsboro's deserted streets to Scopes' classroom (2:02), where Scopes is arrested (4:29).
Trial: No clergy or businessmen went to Scopes' classroom, and no one caught Scopes teaching that humans evolved from "a lower order of animals." Local citizens didn't know or care what Scopes taught. Scopes' indictment was a staged event. Although a local druggist (who also chaired the school board) told a Chattanooga newspaper that Scopes had been arrested (Numbers 1998), he was never formally arrested. This is why, when writing about his experiences, Scopes always put *arrested* in quotation marks (Scopes & Presley 1967).

Movie: Scopes is a biology teacher (3:10) who taught that humans evolved from a lower order of animals (3:40).
Trial: Scopes was not a biology teacher; he was a coach. Scopes substituted for two weeks when the regular science teacher (Mr. W.F. Ferguson) was ill.

[3]In 1965 NBC produced another movie of *Inherit the Wind* starring Melvyn Douglas (as Drummond) and Ed Begley Sr. (as William Jennings Bryan). This movie altered the play less than did the 1960 film, but removed the humor and most important passages. The bias against the fundamentalists was removed, Hornbeck had a much less prominent role, and the confrontation between Bryan and Darrow was shortened and included no discussion of sin and sex. In 1988 NBC released another made-for-television movie of *Inherit the Wind* starring Jason Robards as Darrow, Kirk Douglas as Bryan, and Darren McGavin as Mencken. This movie was largely ignored. In May of 1999, the Showtime network produced and aired yet another version of *Inherit the Wind* that starred, among others, Jack Lemmon and the late George C. Scott. The movie received mixed reviews.

[4]Despite these misgivings, Scopes believed that *Inherit the Wind* "captured the emotions in the battle of words between Bryan and Darrow" (Scopes & Presley 1968).

Movie: The trial was driven by theological and intellectual issues. Initially, the potential economic benefits of the trial are dismissed [one businessman is asked when he last sold grits to a "smart aleck from New York," and another is asked when he last rented a room to a Frenchman (5:34)]. Local businessmen realize the potential economic benefits of the trial only after learning that William Jennings Bryan will be involved in the case ["The Lord has sent his right hand ... [People] will come pouring out of the hills. This town will fill up like a rain barrel in a flood. This will put Hillsboro on the map." (7:15)]. Thereafter, economic benefits of the trial are occasionally mentioned but are not portrayed as being overly important.

Trial: The Scopes trial was a publicity stunt concocted to stimulate Dayton's economy; locals—most notably businessman George Rappleyea—wanted to use the trial to generate publicity that would attract business and industry to Dayton. Before the trial started, local businessmen staged various publicity stunts (e.g., fights at a local barber shop) to keep the trial in the news.

Movie: Scopes' fiancée (Rachel Brown), a teacher who is the fundamentalist preacher's daughter, wants Scopes to recant (9:30, 43:30). Scopes refuses.

Trial: Scopes had no fiancée, much less one wanting him to recant.[5]

Movie: A newspaper reporter from the *Baltimore Herald* arranges for Scopes to be defended by Darrow (11:04, 19:26).

Trial: Darrow volunteered his services for Scopes' defense. This was the only time in his life that Darrow offered his services free of charge. Mencken was from the *Baltimore Sun*, not the *Baltimore Herald*.

Movie: Scopes is a central figure throughout the trial. He is referred to as a martyr (11:40).

Trial: Scopes was a relatively minor figure in the trial. On days that Scopes was late for the trial, the proceedings often started without him.

Movie: When he arrives in Hillsboro (i.e., Dayton, Tennessee, "the buckle of the Bible Belt"), Bryan is greeted with a parade and people singing "Give Me That Old Time Religion" (13:50). Bryan gets a similar welcome at the courthouse on the first day of the trial (31:01). Darrow's arrival in Hillsboro is virtually unnoticed (24:36). When Darrow arrives at court, he is greeted by scowling, booing residents (31:09). People hold signs saying "Down With Darwin," "Atheists Go Back to Your Monkey" and "Keep Satan Out of Hillsboro."

Trial: Darrow, like Bryan, was greeted warmly by Dayton's residents; both were given a welcoming dinner at Dayton's Progressive Club.

Movie: Local citizens are portrayed as fanatical, ignorant, mean, and threatening (20:26, 41:42, 42:42, 43:12, 52:20, 1:32:45). Darrow insults the residents of Hillsboro (1:18:00).

Trial: The local citizens were pleasant to the defense. Darrow praised the people for having been "treated better, kindlier, and more hospitably than I fancied would have been the case in the north." Journalist H.L. Mencken, not Darrow, offended the residents of Dayton.

Movie: Townspeople are led by Reverend Jeremiah Brown, a fanatical fundamentalist preacher (22:14, 24:01).[6] At the prayer meeting after the first day of the trial, Brown justifies his fanaticism by proclaiming that "Heaven has chosen us to show the way." Brown claims that Scopes offers nothing but sin, asks God to strike down Scopes and his sympathizers (including his daughter), and urges eternal damnation for Scopes (52:40). Bryan quotes Proverbs 11:29 as he intervenes to save Rachel from her fanatical father (53:12).

> *He who troubles his own house will inherit the wind, and the fool will be servant to the wise of heart.*

Trial: There was no such preacher leading the people against Scopes.

Movie: Bryan, Darrow, and others involved in the trial stay at a hotel called the Mansion House (27:42).

Trial: There was no hotel called the Mansion House in Dayton at the time of the trial. Many of the trial's participants stayed at the Aqua Hotel, Dayton's only accommodation for visitors (many others, especially the journalists covering the trial, stayed in buildings owned by local businesses). Expert witnesses stayed at a large, old house that George Rappleyea had prepared as headquarters for the defense. Since that building hadn't been inhabited for almost a decade, some people referred to it as "the haunted house" and "the Mansion" (Scopes & Presley 1967).

Movie: Scopes' defense team consists only of Darrow, who is assisted by H.L. Mencken. The prosecution's team consists of Bryan and a local attorney.

Trial: Both sides were represented by teams of attorneys. The counsel for the prosecution included Bryan, Bryan's son (William Jennings Bryan, Jr.), Ben McKenzie, J. Gordon McKenzie, A.T. Stewart, Wallace Haggard, and brothers Sue and Herbert Hicks. Counsel for the defense included Darrow, John R. Neal, Arthur Garfield Hays, Dudley Field Malone, W.O. Thompson, and F.B. McElwee, and was assisted by biblical authority Charles Potter. Mencken had no role in the defense team.

Movie: Darrow complains when the judge uses the title of "colonel" to address Bryan (36:07; also see 16:34). In response, the judge makes Darrow a "temporary honorary colonel" in an effort to hide his bias (37:34).

Trial: Titles such as "general" and "colonel" were used to address all of the lawyers, including Darrow. Darrow thanked the court for the title, saying "I shall always remember this court as the first one that ever gave me the great title of Colonel and I hope it will stick to me when I get back North."

Movie: Darrow objects to a prayer meeting on the evening of the first day of the trial (41:10).

Trial: Darrow did not object to an evening prayer meeting at the end of the first day of the trial. However, Darrow did later object to each day's proceedings being opened with prayers.

Movie: Scopes spends several days in jail (46:52, 1:13:51).

Trial: Scopes spent no time in jail.

[5]Scopes claimed that Lawrence and Lee added the fiancée to enhance the drama and provide romance for "the balcony set."

[6]The play version of *Inherit the Wind* does not mention the word *fundamentalist*.

Movie: The jury is never excused; they are in the courtroom at all times.
Trial: The trial lasted from July 10 to July 21, 1925, but the jury was in the courtroom for only about three hours.

Movie: Bryan condemns "godless science" (1:02:15) and claims that "scientism" is the "way of darkness" (47:37).
Trial: Bryan enjoyed science, read about science, and was a member of the American Association for the Advancement of Science. He even supported the teaching of evolution, provided that humans were made exempt from the process.

Movie: Bryan betrays the confidence of Scope's fiancée by forcing her to testify against Scopes (1:08:02), thereby making Scopes look like a nonbeliever. Bryan's fanatical examination of Rachel leaves her in tears (1:12:52).
Trial: No women participated in Scopes' trial. Bryan was courteous to witnesses; it was Darrow who was cited for contempt.

Movie: A local farmer whose son had been condemned by Rev. Brown (1:10:01) puts up his farm as a guarantee to cover Darrow's citation for contempt of court (1:20:50).
Trial: The trial included no testimony about any deceased children of local residents. No local farmer offered to pay Darrow's fine. However, George Rappleyea, an architect of the trial, had decided to "show [the fundamentalists] up to the world" after hearing a fundamentalist preacher condemn a dead child because its parents hadn't had it baptized (Moore 1998).

Movie: William Jennings Bryan and many of the citizens of Dayton are portrayed as stupid, fanatical, uncouth idiots, bigots, and villains. It is hard to watch *Inherit the Wind* without detesting Bryan's fanaticism (1:12:55, 1:45:10, 1:50:50, 2:00:35).
Trial: William Jennings Bryan was a likable, generous, kind, and intelligent man. He was the greatest orator of his time and wanted to be friends with Scopes despite their different opinions about Tennessee's Butler Law (i.e., the recently passed law under which Scopes was prosecuted).[7] Bryan had served as Secretary of State under Woodrow Wilson (16:21), where he advocated progressive ideas such as an income tax, the free and unlimited coinage of silver, the creation of the Department of Labor, and women's suffrage.

Movie: Expert witnesses are not allowed to testify (1:16:30).
Trial: Twelve scientists and theologians were allowed to make statements as part of the record presented by the defense. None of the expert witnesses was cross-examined.

Movie: Darrow requests permission to withdraw from the case (1:18:02).
Trial: Darrow never requested permission to withdraw from the case.

Movie: Local citizens burn Scopes and Darrow in effigy, shout at Scopes in jail, and threaten to lynch Scopes while "Glory, Glory Hallelujah" plays in the background (1:21:35).
Trial: Local citizens didn't burn Scopes and Darrow in effigy or threaten to lynch Scopes. In fact, citizens of Dayton liked Scopes, and Scopes greeted people coming into town for the trial. There was no morally outraged posse of citizens in Dayton. Scopes was never jailed.

Movie: When called by Darrow as a witness (1:28:50), Bryan claims that he takes every word of the Bible literally.
Trial: Bryan volunteered to Darrow that he didn't believe in a literal interpretation of the Bible.

Movie: Bryan says he has not read (and would not read) Darwin's *Origin* (1:30:38).
Trial: Bryan read *Origin* in 1905; he was familiar with Darwin's work.

Movie: Darrow asks Bryan about sex in the Bible. Bryan tells Darrow that all sex is sin (1:36:35).
Trial: There was no mention of sex or sin at Scopes' trial.

Movie: Bryan claims that creation occurred at 9:00 a.m. on 23 October 4004 BC, as proposed by Bishop Ussher (1:41:20).
Trial: Bryan didn't claim to know the age of the Earth. When cross-examined by Darrow, Bryan handled most of the questions well.

Movie: Darrow vigorously defends Scopes.
Trial: Darrow asked for a guilty verdict.

Movie: Bryan's wife questions Bryan and his actions (1:47:40, 1:49:50).
Trial: Bryan and his wife were on good terms; she didn't question him. Bryan's wife was a semi-invalid for whom Bryan was protective.

Movie: WGN radio broadcasts the verdict of the trial (1:51:36).
Trial: WGN broadcasted most of the trial, at considerable expense (Moore 1998). The Scopes trial was the first trial to be broadcast on radio.

Movie: After his conviction, Scopes loses his teaching job (1:57:26).
Trial: Scopes' job remained open to him. He chose to leave Dayton for graduate school.

Movie: When the verdict is announced, Bryan becomes vindictive and complains about the paltry $100 fine levied against Scopes (1:58:40). Bryan wants a "more drastic punishment."
Trial: No one cared about the fine levied against Scopes; this lack of concern with the fine (and the technical violation of the law that resulted) was the basis for Scopes' conviction being later overturned by the Tennessee Supreme Court. Bryan offered to pay Scopes' fine.

Movie: Protesting Scopes' light punishment, Bryan throws a fit and tries to make a closing speech in the courtroom to regain people's respect (1:59:30). However, he is blocked by the judge, who abruptly ends the trial (2:00:00). After the court is adjourned, Bryan screams his closing remarks (2:00:16).
Trial: Bryan wasn't driven to insanity or despair in the courtroom. Darrow's plea for a guilty verdict prohibited Bryan from giving his closing statement and cross-examining Darrow. Bryan did not get to

[7]Before the trial, Scopes attended a dinner at Dayton's Progressive Club honoring Bryan. Bryan, who had spoken at Scopes' high school graduation in 1919, remembered Scopes.

deliver his closing statement—a statement that he felt was his life's "mountain peak."

Movie: Bryan dies in the courtroom (2:01:30).
Trial: Bryan died in Dayton five days after the trial a few blocks up the street from the courthouse. Although Bryan was an ardent pacifist, he was given a hero's burial in Arlington National Cemetery. (Bryan had served as a colonel in the U.S. Army during the Spanish-American War, but he never saw combat.)

Movie: Darrow is righteous, saintlike, and wise at heart, whereas the minister has troubled his own house. The minister and Bryan are the fools who inherit the wind.
Trial: There was no clear-cut "winner" of the trial; different observers reported different "winners" of the trial and different perceptions of the participants.

Despite its historical inaccuracies, *Inherit the Wind* remains an excellent movie for examining anti-intellectual movements such as creationism. Although *Inherit the Wind* points out the importance of resisting bigotry and other such movements, it also addresses an important aspect of education: namely, the ability to think for one's self. This is best summed up by Rachel, the fictitious character representing Scopes' fiancée who was torn between love and faith. After leaving her father's home, Rachel says what she's learned:

> *You see, I haven't really thought very much. I was always afraid of what I might think—so it seemed safer not to think at all. But now I know. A thought is like a child inside our body. It has to be born . . . Bad or good, it doesn't make any difference. The ideas have to come out—like children. Some of 'em healthy as a bean plant, some sickly. I think the sickly ideas die mostly . . .*

Watch *Inherit the Wind.*

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Scientific creationism may be poor science, but it is powerful politics. And politically, it may succeed.
—Laurie Godfrey, 1981

There is no evidence, either in the present world or in the world of the past, that Man has arisen from some "lower" creature. He stands alone as a separate and distinct created type, or basic morphological design, endowed with qualities that set him far above all of the living creatures.
—Duane T. Gish, Institute for Creation Research, 1985

8

Causes that Stir the World...
The Lingering Threat

Creationists have consistently lost court cases involving the insertion of creationism into (and the banning of evolution from) public schools. Many scientists and others have praised these court decisions as protections against the establishment of religion in public schools. Nevertheless, evolutionary biology continues to face opposition that it has experienced since before the Scopes trial (Bull & Wichman 1998), while creationism has become increasingly popular. There are a variety of reasons underlying the popularity of creationists' claims:

Many people will not accept the fact that the world is governed by coldly indifferent, consistent and unvarying natural laws that are not sympathetic to our egos and desires. These people, who insist that humans have a unique and miraculous freedom from biology, are especially troubled by the fact that humans evolved from other organisms (i.e., that humans were not created specially in the image of a deity). Charles Darwin predicted this response in his *Descent of Man and Selection in Relation to Sex* (Darwin 1871):

> *The main conclusion arrived at in this work, namely that man is descended from some lowly organized form, will, I regret to think, be highly distasteful to many.*

To avoid this "highly distasteful" feeling, many people choose to abandon evidence and reason in favor of belief in the paranormal. In contrast to science, which demands a critical examination of evidence, creationism's self-serving quick-fix makes many people comfortable with their ignorance and validates what they want to hear (e.g., see Padian 1997).

Creationists have won the public debate by sacrificing sophisticated arguments for simplicity, ignorance, religious zeal, and populist appeal. For example, creationists have used the vernacular definition of the word *theory* to imply that evolution is not a fact.[1] After creating this illusion, they then demand that their claims be heard as a matter of "fairness." This strategy has been remarkably successful at the local level because it squares with the public's belief in hearing all sides of a story. Creationists invoke "fairness" to preach nonsense with impunity. Biologists who protest are labeled "censors."

Scientists have been far less successful in manipulating the public discussion and vocabulary than have creationists (Taylor & Condit 1988). As noted by Schmertz and Novak (1986), creationists have "grabbed the good words." Scientists often appear arrogant and/or as a detached elite most interested in maintaining the hegemony of the scientific establishment (Lessl 1988; Gould 1983; Taylor & Condit 1988). Creationists have attacked evolutionists because evolutionists (in Broad 1981; also see Lane 1982):[2]

> *act as if their very lives [are] being attacked . . . They're pompous and arrogant, just the kind of people the First Amendment was written to protect us against.*

Scientific issues are often made inaccessible because of the weak rhetorical skills of scientists and the biases of journalists (Taylor & Condit 1988). This often results in creationism being presented as the equal competing theory to evolution, thereby enabling creationists to make inroads with the public. As Arkansas State Senator James Holsted noted after the *McLean* decision (Sponsor sees victory, 1982; Moore 1999b):

[1]Creationists have repeatedly tried to convince the public that scientists use the word *theory* as laypeople do—that is, as a guess or speculation. Many popular magazines and newspapers equate creationism with evolution by calling creationism a "theory" (e.g., Explanations of origin, 1981). Reporters having little training in or understanding of science report the controversy to a nonscientifically trained and populist public. As a result, creationism is often portrayed as the equal, competing theory of human origins that creationists claim it to be (e.g., Same evidence begets different conclusions, 1981).

[2]For a sampling of creationists' ideas and viewpoints, visit "The Ultimate Creation/Evolution Page" at *http://www.voicenet.com/joel-macd/cre-evol/creation.html*.

I have already won because creation-science is now well known.

Creationists equate biologists' debates about how evolution occurs with the fact that evolution doesn't occur. This perversion and falsification of reality is often effective, and usually typifies creationists' tactics (Gould 1983).

Modern creationists try to appear scientific by claiming the professionally discredited but publicly accepted Baconian view of science (e.g., inductive empiricism). With this as a foundation, creationists then claim that the "unempirical" nature of evolution makes creationism and evolutionism scientific equals.

Because scientific "facts" can change (e.g., we've rejected Aristotelian physics, and amended Newton's ideas when we had a better theory), evolution is necessarily speculative. Creationists have exploited this by portraying evolution as being unscientific, and therefore no more scientific than creationism (Gish 1978; Morris 1980). This leads to claims such as those made by a biologist at the Institution for Creation Research, who argued that (see Nelkin 1976):

> *Science can't be trusted but God can . . . [evolutionary] data is* [sic] *so permanently incomplete that it is hardly a good place to sink an anchor for anything to do with eternity.*

This Baconian leveling of evolution and creationism greatly empowers local demands for equal time for creationism in public school classrooms.

Creationists' claims often touch a nerve deep in the national psyche that connects Americans to our nation's religious roots (Shermer 1997). Creationists' appeals for equality have a visceral and populist appeal, especially when evolutionists are portrayed as elite, pompous authoritarians who are violating the rights of "common people" (Culliton 1978).

Although the success of creationists has depended primarily on scientific illiteracy and a pluralistic democracy (Matsumura 1998), there has been another factor that has helped creationism become popular: the hesitancy of many biology teachers to resist creationism.

Some Biologists Are Also To Blame

Although it is easy to blame the popularity of creationism on scientific illiteracy, uncritical journalists, and determined religious activists, a surprising fact remains: many biologists are creationists (e.g., Aguillard 1999; Paterson & Rossow 1999). For example, when NABT established its Fund for Freedom in Science Teaching in the 1970s, the national office received letters *opposing* NABT's efforts against creationists, claiming that creationists' ideas should be tolerated in science classrooms and that NABT should stop trying to "silence people," "persecute creationists," and "promote atheism and agnosticism in the schools" (see Nelkin 1982 and references therein).

Today, many biologists have similar pro-creationism attitudes. I've heard many biologists proclaim that they teach creationism as an "alternate hypothesis" in their biology classes to ensure "academic freedom" (e.g., as occurs at John Scopes' school today; see Moore 1999d). Others who refer to themselves euphemistically as "theistic evolutionists" and/or "creation scientists" espouse a God-driven and purposeful "Darwinism." When *The American Biology Teacher* (the journal that I edit) publishes an anti-creationism article or editorial, I'm flooded with letters such as the following one that I received after the first article in this series appeared in September, 1998:

> *In response to your issue devoted to evolution and the Scopes trial, I have sent a special donation to my favorite creation groups: Answers in Genesis and The Institute for Creation Research.*
>
> *Biology makes no sense* ***except*** *in the light of creation and a relatively short time span. I take every opportunity I can to show my students the convoluted and misleading statements and reasoning that are made in their textbooks. I show them for example that one of the best examples of evolution given in their text – the peppered moth – in fact still is a peppered moth even now. Mutations are defects in the once perfect creation . . . Evolutionary concepts and preconceptions hamper research in biology. I want to make sure that my students are ready for the future.*
>
> *I will not sign this letter because there are too many thought police out there who would love to invade my classroom and stamp out free inquiry and thought. I love my job.*

What Can Be Done?

Darwinian evolution and its recent modifications have been demonstrated in many disciplines; few enlightened people question the superiority of the evolutionary model or doubt its central tenets. Indeed, most scientists view "scientific creationism" as an oxymoron that is used to conceal a religious agenda based on biblical literalism. Nevertheless, the various forms of creationism (Scott 1996b) remain immensely popular; no amount of data will convince most creationists to abandon their beliefs, for the central issue is not evidence and reason, but religious faith and evangelical politics (Gell-Mann 1990; Gould 1983). The persistence of creationists and creationism is a tribute to their determination and goals; namely, to impose their religious beliefs on public schools and, in doing so, create a fundamentalist hegemony in public education.[3] What can scientists and others do to prevent this from happening?

[3]As proclaimed by Bryan College's Kurt Wise (a student of

Emphasize evolution as the unifying concept of biology. If students are to understand biology rather than view it as a collection of definitions, terms and "facts," then biology must be presented in the context of evolution. All other concepts of biology (e.g., that all organisms consist of cells; that a few basic aspects of biochemistry affect virtually all organisms) are direct results of evolution. This claim is hardly new, yet it remains important; indeed, a teacher's knowledge of evolution is the most important factor in determining the degree to which he or she emphasizes evolution in the classroom (Aguillard 1999). If students aren't taught anything about evolution, or are given a tentative or "purposeful" view of evolution, we shouldn't be surprised when they repeat this approach in the classes that they teach.

Get involved. The disappearance of evolution from biology textbooks after John Scopes' conviction (Moore 1998b, d and references therein) went unnoticed by most biologists, who thought that the trial in Dayton was a victory for their cause. Indeed, most biologists did not even realize that they had lost, largely because they did not appreciate the dedication of creationists or the popularity of creationism. However, some biologists saw the importance of local involvement in the controversy. For example, in May of 1966 George Gaylord Simpson wrote a letter to Susan Epperson's father (Dr. T.L. Smith of The College of the Ozarks), noting that:

> *I have been much interested in the suit brought by your daughter, Mrs. Epperson . . . Although of course I hope that Mrs. Epperson wins her suit and that Arkansas is rid of [its] ridiculous law, I must confess to discouragement as to how much can really be accomplished in this way. Through the power to select textbooks and to hire and fire teachers, innumerable school boards and other officials can and do de facto prevent the teaching of evolution without the aid of state law.*

Simpson was right. Faced with continuing defeats in the courts, creationists have increasingly focused their efforts at the local level, such as with school boards, textbook adoption committees, and curriculum-writing groups. Thanks to the highly decentralized nature of public schools, these efforts have had a chilling effect on the content of lessons and the manner in which many teachers go about their work (Eve & Harrold 1991; Nelkin 1982). Many biology teachers do not mention evolution out of fear of reprisal.

As long as faculty at colleges and universities continue to ignore K-12 education, we shouldn't be surprised when students and others reject evolution while endorsing paranormal beliefs such as creationism, psychics, astrology, and faith healing.[4] Such beliefs can have significant consequences. For example, a 1998 article in *Pediatrics* (a journal published by the American Academy of Pediatrics) reported that 80% of sick children died in the United States when their parents put their trust in faith healing rather than medicine.[5]

Educate members of the media. Like the rest of the public, many reporters and editors have serious misconceptions about evolution and creationism. For example, only 57% of newspaper editors disagree strongly with the statement that "Every word in the Bible is true," and only 41% disagree strongly with the statement that "Adam and Eve were actual people," roughly the same proportions that occur in the general public (Zimmerman 1990). When editors devote space to the controversy, 75% give equal or more space to creation science than to evolution. Meanwhile, of the roughly 1,600 daily newspapers published in the U.S., about 1,400 publish daily astrology columns, and there are fewer than 50 print disclaimers (e.g., that the columns are not scientific, are only for entertainment, etc.; see Shamos 1995).

Appreciate the public appeal of creationism. After the Scopes trial, Arthur Garfield Hays (who helped defend Scopes) announced his hope that "[anti-evolution] laws . . . will hereafter meet with the opposition of an aroused public opinion" (Hays 1925). Unfortunately, Hays was wrong: A variety of polls have consistently found that *most Americans want creationism to be taught in public schools* (e.g., Willard 1996, Larson 1997; Glanz 2000). Scientists have been reluctant to deal with this because they have not come to grips with creationism's immense appeal to the public, nor have they acknowledged that the impetus for creationism often comes from social forces that lie beyond the reach of courts (Larson 1989).

Although scientists would like to think otherwise, the public does not passively accept the knowledge presented by scientific experts (Ziman 1991). Moreover, different intellectual communities use different criteria for determining what is reasonable or "scientific"; this is why creationism is considered differently by the public than by many scientists. At the local level, technical and professional questions are of less immediate importance; teachers and local school boards do not have to look only at proclamations issued by professional societies or professional definitions of what science is or isn't. Rather, they must

Stephen Jay Gould), "I intend to replace the evolutionary tree with the creationist orchard, separately created, separately planted by God" (quoted in Wise 1998). The biology department at Bryan College holds that the "theory [of evolution] . . . is not supported by any real scientific evidence" (see Wolfson 1999).

[4]For a discussion of the increasing popularity of the paranormal, see New poll (1998) and Pickover (1998).

[5]All of the children in this sample would probably have survived if their parents had sought medical treatment. For example, a two-year-old child who choked on a banana had life signs for nearly an hour while her parents called people to ask for their prayers. Similarly, a 12-year-old girl was kept out of school for seven months while a tumor grew to a circumference exceeding 100 cm. Both children died.

balance their notions of scientific integrity (however distorted and misunderstood) with local autonomy (Taylor 1992; Affannato 1986). Personnel within local school districts do not need the sanction of state legislatures to implement practices congruent with their ideological biases (Berman 1997).

Appreciate the legal history of the creationism/evolution controversy. Understanding the legal history of the evolution/creationism controversy can help scientists appreciate creationists' goals, strategies and tactics. The clear-cut court decisions described in earlier chapters of this book can be effective tools for resisting creationists' attempts to impose their religious beliefs in science classrooms. However, many threats—legal and otherwise—remain. For example, a variety of U.S. Supreme Court decisions have affirmed that the use of religious manuals such as the Bible in public schools need not violate the First Amendment (*Epperson v. Arkansas*; see Moore 1998b, c). Similarly, states have an "undoubted right" to prescribe the curriculum for their public schools (*Epperson v. Arkansas*; see Moore 1998b, c), and a religious purpose alone is not enough to invalidate an act of a state legislature (*Edwards v. Aguillard*; see Moore 1999c).

Realize that most people won't base their beliefs on evidence. Before the Scopes trial, anti-evolutionist Frank Norris wrote to William Jennings Bryan that Scopes' trial would be "the greatest opportunity to educate the public, and will accomplish more than ten years of campaigning" (Larson 1997). To scientists' dismay, public debates about issues such as the creationism/evolution controversy often involve more campaigning and discursive techniques than logic and factual evidence (see Pigliucci 1998). Public opinion doesn't always mirror scientific evidence, yet it has tremendous implications for scientists. Indeed, most funds for scientific research are provided by governmental agencies that are subject to the whims of politicians and, by extension, public opinion. (Pigliucci 1998; Moore 1999a and references therein).

Challenge the empirical claims of creationists. Creationists and their dogma are unbeatable on their own terms (e.g., miracles, God's will); they risk losing arguments only when they leave the grounds of creationism (Willard 1996). Scientists must do more than label creationism as nonsense and nonscience. Rather than pretend that creationists make no valid claims, scientists must challenge the claims that creationists *do* make. For example, the arguments for a "young earth" or for adaptation only with "kinds" (Gish 1978, 1988) are falsified by volumes of biological and paleontological research (Kitcher 1982; Miller 1983). Creationism by any other name—for example, "abrupt appearance theory" or "intelligent design theory" (e.g., see Scott 1996b)—remains creationism. It cannot explain the natural world and its diverse phenomena, cannot provide a basis for solving old or new problems, and cannot help us acquire new information.

Train a scientifically literate population. Creationism thrives on religious dogmatism and scientific illiteracy (Bennetta 1986; Prewitt 1983).[6] Unfortunately, scientific illiteracy is as American as apple pie; for example, recent surveys show that only about half of the population knows how long it takes Earth to orbit the sun (see Recer 1998; Willard 1996; Hazen & Trefil 1991; Cavanaugh 1985). This illiteracy, combined with a lack of knowledge of philosophy, enables creationists to manipulate public opinion.

Without a basic knowledge of science, the public will remain unable to distinguish experts from crackpots; this leveling reduces everything to the lowest common denominator and, in doing so, substitutes arbitrary authority for merit (Willard 1996). As long as the public remains scientifically illiterate, we should expect the creationism controversy to continue and our classrooms to be threatened.

Realize that the threat persists; creationists continue their long history of attacking science and enlightened thinking. Throughout most of the U.S., and aided by organizations such as the Creation Research Society, the Creation Science Research Center, and the Institute for Creation Research, creationists continue to try to force their ideas into public schools. Here are a few of the most recent examples of their activities:

Legislators of several states continue to weaken science education by attacking the validity of evolution. For example, in 1995 Alabama required that evolution be taught as a "theory, not fact" (Figure 8.1; also see Scott 1995), and in 1997 the Washington Senate took up yet another measure "not to teach evolution as fact" (Pigliucci 1998). North Carolina House Bill 511, proposed in March of 1997, attempted to "ensure that evolution is not taught as fact in North Carolina public schools" (Lewis 1997; also see Moore 1996). Creationists continue to argue that the exclusion of creationism from classrooms of public schools is unfair and unscientific, that evolutionists need governmental authorities to shield students from the "scientific truth" of creationism, and that national leaders have an "evolutionary bias" that must be overcome (e.g., see Gabler & Gabler 1985).

A school district in Kentucky that had an "equal time" rule in place before *Edwards* revised its science curriculum to "avoid mention of creationism

[6]Despite the importance of evolution in biology, most students do not understand the basic aspects of evolution. Students' misconceptions often remain ingrained even after a thorough discussion of the evidence supporting evolution (e.g., Sinclair & Pendarvis 1998).

A MESSAGE FROM THE ALABAMA STATE BOARD OF EDUCATION

This textbook discusses evolution, a controversial theory some scientists present as a scientific explanation for the origin of living things, such as plants, animals and humans.

No one was present when life first appeared on earth. Therefore, any statement about life's origins should be considered as theory, not fact.

The word "evolution" may refer to many types of change. Evolution describes changes that occur within a species. (White moths, for example, may "evolve" into gray moths.) This process is microevolution, which can be observed and described as fact. Evolution may also refer to the change of one living thing to another, such as reptiles into birds. This process, called macroevolution, has never been observed and should be considered a theory. Evolution also refers to the unproven belief that random, undirected forces produced a world of living things.

There are many unanswered questions about the origin of life which are not mentioned in your textbook, including:

- Why did the major groups of animals suddenly appear in the fossil record (known as the "Cambrian Explosion")?
- Why have no new major groups of living things appeared in the fossil record for a long time?
- Why do major groups of plants and animals have no transitional forms in the fossil record?
- How did you and all living things come to possess such a complete and complex set of "instructions" for building a living body?

Study hard and keep an open mind. Someday, you may contribute to the theories of how living things appeared on earth.

Figure 8.1. In 1995, biology textbooks throughout Alabama were supplemented with this disclaimer stating that evolution is an "unproven belief" that "should be considered as theory, not fact."

in its curriculum guide, calling it 'alternative theories to evolution' and adding it to the science classes" (Kennedy 1992).

In the late 1980s and 1990s the Pro-Family Forum of Fort Worth, Texas distributed pamphlets titled *Can America Survive the Fruits of Atheistic Evolution?* The pamphlets claim that evolution leads—among other things—to rampant abortion, venereal disease, racism, divorce and Communism (e.g., Thompson 1981; Paterson & Rossow 1999).

The Religious Right often exploits the evolution/creationism controversy to promote its goal of instituting Christianity in public education (Berman 1997). In 1992, the religious right won control of the school board in Vista, California. The board quickly began promoting the teaching of creationism; it also reduced support programs for poor children, tried to limit sex education and multicultural classes, and reintroduced school prayer, in direct violation of Supreme Court rulings (see Berman 1997). Many fundamentalists view the evolution/creationism controversy as a "holy war" (e.g., see Paterson & Rossow 1999).

Politicians such as Alabama's former Governor Fob James openly ridicule science (and especially evolution) and vow to disregard court decisions (e.g., see Poovey 1998).

Evolution is not taught in many schools (e.g., see Kennedy 1998; Lerner 1998). In other schools, evolution is often presented as a purposeful, deity-driven process (e.g., "theistic evolution"), despite the fact that religion has opposed virtually every major scientific idea.[7] Many teachers wanting to engage students in evidence-based discussions of evolution are often hindered by local restrictions (e.g., textbook disclaimers). Few popular reports of science-related issues—and especially of those issues involving creationism/evolution—provide an adequate account of the scientific issues (La Follette 1983), perhaps because most reporters cannot appreciate the scientific arguments underlying the issues (Pope 1981). "Objectivity" for most reporters involves merely reporting what people say—regardless of its merit—and excludes evaluations of the relative competence of the people who make claims (Taylor & Condit 1988). For example, most reports of the *McLean v. Arkansas Board of Education* trial (Moore 1999b) did not discuss the credibility of Act 590's sponsors or the training of the "scientists" who supported creationism (Taylor & Condit 1988).

Many people—including many science teachers—present creationism and evolution as equally scientific and equally meritous ways of understanding origins. This, in turn, transforms scientific "truth" (and therefore a science curriculum) into little more than opinion (e.g., "What do *you* think?") and leads to truth in science being determined by taking a vote rather than by an

[7] In 1951 George G. Simpson noted that "Evolution has no purpose; man must supply this for himself." Humans have done just that: purpose appears in nature only when humans appear—this is why the anti-evolution laws banned only the teaching of *human* evolution. According to many creationists, only humans are exempt from the natural processes affecting all other organisms; that's why it is acceptable for weeds and possums to have evolved, but it is not acceptable for humans to have evolved.

examination of evidence (e.g., as occurred in Tennessee, Mississippi and Arkansas; see Moore 1998a-c, 1999a).

In rural Draffenville, Kentucky, at the start of the 1996-97 school year, the Marshall County superintendent learned that the science textbooks being used by fifth and sixth graders contained a two-page discussion of the "Big Bang" theory for the origin of the universe, but no parallel account of the biblical version from Genesis. Invoking the "balanced treatment" argument by claiming that "we're not going to teach one theory and not teach another theory," the superintendent recalled the textbooks to his office, where staff were told to glue the two offending pages together (e.g., see Berman 1997).

In 1996, Pope John Paul II announced that he saw no conflict between religious teachings and the theory of evolution, adding that evolution is "more than just a hypothesis" (Marklein 1996; see Figure 8.2). Although many hoped that the Pope's statement would reassure Christians trying to reconcile science with their religious beliefs, creationists denounced the announcement, and the anti-evolution drumbeat intensified. For example, in 1996, legislatures in six states considered anti-evolution bills; two more were introduced in 1997, and others in 1998 (Matsumura 1998). Some political platforms now include anti-evolution planks (Paterson & Rossow 1999). Recently, bills were narrowly defeated in Georgia and Ohio to require that "evidence against evolution" be taught in schools (Scott 1996a, 1997), and Tennessee narrowly defeated a proposal that would have made teachers who taught evolution as fact subject to being fired (Matsumura 1995). By early 1997, at least five similar bills had been introduced in other states. Some of these bills contradicted Supreme Court decisions (e.g., *Edwards v. Aguillard*; see discussion in Paterson & Rossow 1998).

Many science teachers throughout the country continue to promote "creation science" and creationism in their classrooms (e.g., Updates, 1998). In several areas, local pressure to eradicate the mention of evolution extends beyond the classroom; for example, *Seaworld*—an organization that claims to support science education—wants to ban the word *evolution* at its parks (Untitled article, 1997). Similarly, in 1996 the Rima Bible Institute tried to force the Tulsa Zoo to remove the word *evolution* from some of its signs. The next year, an English teacher affiliated with Rima offered to prepare a curriculum guide on "creation science" for a public school in Tulsa (Untitled article, 1997).

Pope says facts back evolution

• Statement aligns Vatican with others in Catholic church, but it may rattle some Christian creationists

BY LAURIE GOODSTEIN
Washington Post

Pope John Paul II issued a statement this week saying new research shows that physical evolution is "more than just a hypothesis," a significant step beyond the Catholic Church's pronouncement nearly 50 years ago that evolution was worthy of discussion but still an open question.

The pope nevertheless said the human soul is divinely created anew in each person and not subject to the evolutionary process. Any other teaching is "incompatible with the truth about man," he said.

His statement is not likely to shake many in his church, which has long assumed the credibility of evolution and taught it in Catholic schools. But it might rattle some non-Catholic biblical fundamentalists who believe in creationism and have respected this pope for his traditionalist reputation and his emphatic teaching against abortion.

Dr. Joseph Torma, professor of theology at Walsh University, a Catholic school in North Canton, said the pope was saying there is no basic conflict between science and religion.

"In the Christian tradition, human beings are made in God's image," Torma said. "According to Scripture, that means we have an obligation to act like God.

"The science issues are really not relevant to the basic Christian assumptions, but what people often do is confuse the purpose of Scripture. Although we say it is religious literature, we turn around and treat it like science.

"The pope is saying he has no problem with science, but with scientists who move into religion.

See POPE, Page A4

Pope John Paul II declared four years ago that the church had erred in condemning Galileo Galilei as a heretic.

Figure 8.2. In October, 1996, Pope John Paul II announced in a message to the Pontifical Academy of Sciences that "the theory of evolution [is] more than a hypothesis." The pope's statement was immediately denounced by creationist groups such as the Institute for Creation Research and Answers in Genesis as "a complete compromise of God's words."

Textbooks have been rejected because they contain "too much evolution," textbooks have been augmented with "it's only a theory, not a fact" disclaimers,[8] teachers have been intimidated, and legislatures have tried to pass laws 1) punishing teachers for teaching evolution as fact, and 2) requiring that teachers present "alternatives to

[8]Facetious responses to these disclaimers have asked whether science courses on human reproduction should include a disclaimer about the "stork theory," and whether Bible publishers should insert a sentence in Genesis indicating that "the scientific method rejects the supernatural approach to explaining the universe" (see discussion in Nelkin 1982).

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evolution" and "evidence against evolution" when they teach evolution.[9]

In at least four states, curriculum guides no longer include the word *evolution*.

A fundamentalist organization called Answers in Genesis, Inc. plans to open a 95,000 square-foot creationism museum in northern Kentucky (local critics have dubbed that museum the "The Fred and Wilma Flintstone Museum"). In late 1998, Answers in Genesis announced via its newsletter and radio ministry its latest strategy that it hopes "will change the way science is taught in public schools" (Huba 1998): the establishment of "Creation Clubs" in schools. These clubs, which Ken Ham says are a "staging ground for outreach" in the schools, are sponsored by teachers who sign pledges to base their teaching on the "inerrant word of God." The clubs are remarkably popular; in late 1999—less than a year after their founding—there were more than 100 clubs throughout the country, and the number was growing rapidly. Answers in Genesis also sponsors "family seminars" about creationism and produces books such as Ham's *The Lie: Evolution* (1987) that dispute biological research and the recommendations of the National Academy of Science's acclaimed 1998 publication, *Teaching About Evolution and the Nature of Science*. Another book distributed by Answers in Genesis, *Refuting Evolution*, has been distributed at many high schools across the country, including Columbine High School in Littleton, Colorado. Answers in Genesis, which blames evolution for a variety of society's ills, including school violence (see Harp 1999), also subverts scientific discoveries to religious dogma; it proclaims that "By definition, no apparent, perceived, or claimed evidence in any field . . . can be valid if it contradicts the Scriptural record." According to Ken Ham, the ministry's founder and executive director, these clubs will help students "defend their beliefs" about creation and counter the information they receive about evolution in science classes. The clubs will "present an alternative scientific viewpoint" and will urge students to ask their teachers "Were you there?" when confronted by evolutionist teachers. Ham, who has sent out hundreds of applications for start-up kits, stresses a populist message:

> *People change their views, and then it gets into books and curricula.*

In Tennessee, where the Scopes legacy remains strong, legislation to restrict the teaching of evolution in public schools appeared in the State Senate in 1994. Reporters flocked to Tennessee, the BBC sent crews, and *Inherit the Wind* had yet another revival of popularity.[10] The Senate Education Committee approved the two-sentence proposal by a vote of 8-1, after which the full Senate debated the proposal for three days. After many professions of faith, the bill failed by a vote of 20-13.

In Dayton, Tennessee, the preachers, citizens, teachers, and local business leaders are virtually unanimous in their rejection of evolution in favor of creationism. Vicki Morgan, who runs the boarding house where John Scopes lived, says that "Twenty of twenty people here will tell you that man was created by God in his image. I don't think God looks like a monkey." Dayton's two bookstores (both Christian) and 47 churches proclaim creationism, as does Bryan College, which in 1999 sponsored a conference about "strategies for teaching creationism legally in public schools." The fundamentalist college, which provides 65% of the area's public school teachers, is adamantly anti-evolution and warns its students that "The threat of the theory of evolution replacing biblical creationism in the classroom was and still is a cause to be reckoned with." Its biology department, which proclaims that evolution has little scientific support, and local teachers agree. For example, Joe Wilkey, who has taught biology for 17 years at Rhea County High School, is a creationist and presents creationism in his biology class. Similarly, Rhea County High School principal Patrick Conner says that "we try to avoid in-depth discussion of . . . evolution. We don't need the controversy . . . If I say the wrong thing, I could be looking for another job." Phil Ashworth, chair of the school's pro-creationism science department, conceded that "scientists would scream bloody murder" if they knew that Wilkey was "giving the religious side equal respect" (Wolfson 1999; Moore 1999).

In most states, teachers avoid teaching evolution. For example, in Kentucky, many high school biology teachers—and some biology professors and administrators at state colleges—skip evolution

[9]Most creationists understand that their future success in the courts will result less from mobilizing anti-evolutionists than from a bill that will survive the inevitable trip through the courts. Many creationists believe that their best hope resides in bills requiring or allowing presentations of "evidence against evolution." As noted in Justice Brennan's majority opinion in *Edwards v. Aguillard*: *We do not imply that a legislature could never require that scientific critiques of prevailing scientific theories be taught . . . [The] teaching of a variety of scientific theories about the origins of humankind to school children might be validly done with the clear secular intent of enhancing the effectiveness of science instruction.*

[10]A sign in a Broadway theater lobby quoted 1996 Presidential candidate Pat Buchanan's comments in support of the Tennessee bill.

altogether. Nancy Stedelen-Meloan, a high school biology teacher at Murray High School, says she discusses creationism but doesn't "even talk about the theory of evolution." Paintsville teacher Jack Ousley says he doesn't "use the word *evolution*" because he "is a Christian."

The year 2000 also witnessed the phenomenal growth of National Heritage Academies, a chain of state-funded charter schools whose science classes are based on creationism. Teachers at these schools are prohibited from discussing anything that contradicts biblical literalism. For example, when parents complained that a teacher had told their children that dinosaurs went extinct 65 million years ago, the teacher changed her lesson plans accordingly, adding that "I basically try to steer clear of any hot issues" (Golden 1999).

These threats will almost certainly intensify and more forcibly threaten science education. For example, a judge could decide that regardless of its merit, one of the creationism-by-another-name proposals does not promote religion. This, in turn, would avoid conflicts with the Establishment Clause, thereby clearing a path for creationism to enter the classrooms of public schools. Although the First Amendment protects us against the governmental establishment of religion, it does not protect us against bad "science" (see discussion in Scott 1994).

Creationists have again put science on the defensive and, in the process, have gained much credibility and support (Wise 1998). So far, court cases about the evolution/creationism controversy have not been decided by public opinion or journalists' ideas of fairness, but rather as matters of constitutional and legal precedent hinging on the prior legal placement of religion (e.g., *McLean v. Arkansas Board of Education*; see Moore 1999b; Willard 1996). But this could change.

Folly in Kansas

In 1998, the state of Kansas appointed a committee of 27 scientists, science educators, administrators, parents and others to prepare a state version of the new national science standards. Not surprisingly, the committee strongly recommended that students learn the basic concepts of science, including evolution. However, when the committee submitted its report (its fifth draft) to the Kansas Board of Education, board member Steve Abrams—the former head of the state Republican Party—objected, claiming that "it is not good science to teach evolution as fact." Linda Holloway, president of the Board, supported him, saying that she "didn't see evidence" for evolution. Months of discussion followed, during which time the controversy became the first evolution-related uproar to go nationwide since Alabama's State Board of Education began supplementing their biology books with disclaimers that discredited evolution (those disclaimers, adopted as a "good compromise" with creationists, stated that evolution is "a controversial theory some scientists present as a scientific explanation for the origin of living things," and that "no one was present when life first appeared on Earth. Therefore, any statement about life's origin should be considered a theory, not fact"—see Figure 8.1; also see Christensen 1998).

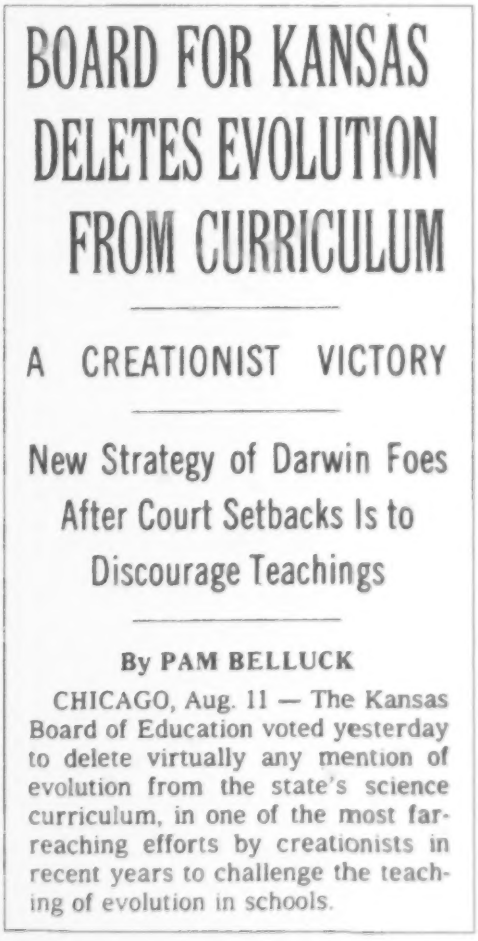
Abrams—with the help of a Missouri-based group called the Creation Science Association of Mid-America—replaced the experts' recommendations with new standards that deleted evolution, deleted the "Big Bang," included case studies that creationists could use to debunk evolution, and explained nature's complexity as being due to "an intelligent designer." Although the sentence about the "intelligent designer" was later removed from the standards as a "compromise," the other pro-creationism changes remained. Other members of the Board used arguments made in earlier court cases to justify the pro-creationism changes in the standards; for example, one member claimed that eliminating evolution from the state science standards "shows a respect for diversity of opinion and ... expands the learning opportunities of the children of Kansas rather than narrowing it." Mark Looy of Answers in Genesis, Inc.—invoking the arguments made almost 75 years earlier by William Jennings Bryan in Dayton, Tennessee (see Chapter 1)—warned that the teaching of evolution creates a sense of purposelessness and hopelessness and leads to "pain, murder, and suicide."

Several state officials in Kansas criticized the new pro-creationism standards. For example, the governor of Kansas (Bill Graves, a Republican) described the new recommendations as "embarrassing," as did some legislators and many scientists. The presidents of the six public colleges and universities in Kansas warned that the pro-creationism standards would "be detrimental to the future of science education in the United States" and would "set Kansas back a century." Similar protests had been made during the Scopes trial (Chapter 1), but they, like those in Dayton, had little effect; on 11 August 1999, the Board of Education approved the sanitized anti-evolution standards by a vote of 6-4 (Figure 8.3).

The Kansas decision did not bar the teaching of evolution; it merely removed evolution from the statewide assessment tests (starting in 2001). In an age when test scores are often more valued than real knowledge, and in which such scores influence school budgets and teachers' salaries, there are no incentives for science teachers in states such as Kansas to discuss evolution. Indeed, time spent teaching evolution

merely leaves biology teachers with less time to discuss topics that *are* covered on the assessment tests. This is why the decision by the Kansas Board of Education was described by *The New York Times* as "a creationist victory" and "one of the most far-reaching efforts by creationists in recent years to challenge the teaching of evolution in schools" (Figure 8.3; Belluck 1999).

The Kansas decision strongly encouraged Kansas' 304 local school districts to diminish or eliminate the teaching of evolution. However, some questioned whether the decision would significantly change science education in Kansas; after all, in Kansas—as in virtually every other state—many biology teachers *already* ignored evolution and, in its place, taught creationism in their classes. As noted by Lu Bitter (co-chair of the high school science department in Pratt, Kansas), the biology classes in many Kansas school districts included creationism and readings from Genesis long before the much-publicized decision by the state's Board of Education.



BOARD FOR KANSAS DELETES EVOLUTION FROM CURRICULUM

A CREATIONIST VICTORY

New Strategy of Darwin Foes After Court Setbacks Is to Discourage Teachings

By PAM BELLUCK

CHICAGO, Aug. 11 — The Kansas Board of Education voted yesterday to delete virtually any mention of evolution from the state's science curriculum, in one of the most far-reaching efforts by creationists in recent years to challenge the teaching of evolution in schools.

Figure 8.3. The decision by the Kansas Board of Education to delete evolution from its curriculum pushed the evolution-creationism debate back into the nation's headlines and it became an issue in the 2000 presidential election. This headline appeared on the front page of *The New York Times* on 12 August 1999.

Why would the Kansas Board of Education reject the recommendations of professional scientists and science educators and adopt such a policy? Much of the answer lies in the powerful appeal of creationism and the public's fear of evolution. The Board of Education, elected by voters, knew that the public overwhelmingly favors the teaching of creationism (e.g., see Chapter 1, Appendix 1). Indeed:

- About half of the people in the United States share a biblical literalist view of human origins, believing that God created humans in their present form no more than 10,000 years ago.
- Almost 80% of Americans favor the teaching of creationism along with evolution.
- More than 40% of Americans favor the teaching of creationism instead of evolution.
- Although college-educated Americans are more likely to accept evolution, only 17% of college graduates are Darwinists (see Ackerman 1999; Appendix 1).

They also knew that more than half of the biology teachers in many Kansas schools think that "creationism should be taught in public schools" (Aldrich 1999). Realizing that the support of the teaching of evolution has cost many politicians (and teachers) their jobs, the Board's decision became almost predictable.

Headlines in *Nature* ("Kansas Makes a Monkey of Itself" in the 20 August 1999 issue), *Science* ("Kansas Dumps Darwin" in the 26 August 1999 issue), and other journals, magazines and newspapers ridiculed the Kansas decision. However, some scientists, many biology teachers, and many Kansans supported the decision. The *Topeka Capital-Journal* voiced the opinion of many when it editorialized that "creationism is as good a hypothesis as any for how the universe began."

The Kansas decision quickly became an issue in the 2000 presidential election. Following the lead of politicians involved in earlier skirmishes of the evolution/creationism controversy, most presidential candidates used questions about the Kansas decision to justify proclamations of faith. Elizabeth Dole supported the Kansas decision by telling voters that "I am a person of strong faith . . . I'm going to leave that to the states." Other candidates explicitly supported the teaching of creationism. Vice President Al Gore, whose home state of Tennessee had waged a long and vigorous campaign against the teaching of evolution and who had often proclaimed his support of science education, said that "Localities should be free to teach creationism. . . ." Texas Governor George W. Bush said that students ". . . ought to be

exposed to different theories about how the world started." Steve Forbes described the theory of evolution as "a massive fraud," and Gary Bauer told voters that he refuses to teach his children that they are "descendants from apes. I just reject the basic tenet of that theory" (Ackerman 1999).

Other States Follow Suit

As the 1900s came to a close, several other states and countless numbers of school districts began considering following the lead of Kansas in deleting evolution from their science curricula. In late 1999, for example, the Kentucky Department of Education deleted the word *evolution* from its guidelines of what public school students should know and can be tested on. *Evolution* had appeared in early drafts of the guidelines, but the Board—in a meeting ostensibly called to correct spelling and grammatical errors—removed *evolution* from the guidelines because it violated the state's "sensitivity guidelines"; other topics besides evolution that the state warned teachers not to discuss included death and divorce (in states such as Louisiana, administrators group evolution with the occult, witchcraft, and drug use; see Appendix 6). The Board further encouraged teachers to teach creationism rather than evolution by pointing out a 1976 Kentucky law (re-enacted in 1990) which stipulates that teachers who cover evolution in class can also teach "the theory of creationism as presented in the Bible" and that students who adhere to the biblical account should get credit on all exams. The state's assessment exams use "sensitivity guidelines" (which group evolution with gun control and similar topics as issues that "may not be suitable for assessment items") to further encourage teachers to teach creationism and ignore evolution (Harp 1999b). Many of the state's educational administrators and biology teachers attack evolution. For example, Kevin Wilson, a high school principal, advocates showing students the "holes in evolution," and another principal describes evolution as a "theory that is largely unsubstantiated." A variety of Kentucky biology teachers have told me that they base their biology classes on "God's word." In the few schools that require evolution as part of the curriculum, biology teachers often call in sick on the one day that evolution is to be covered. If any students or parents express concerns about evolution being taught at their school, the student is given "alternative assignments" (Scanlon & Uy 1999).

Citizens apparently endorsed the Kentucky Board's censorship; at its first meeting following the well-publicized announcement of the anti-evolution changes to the guidelines, the Board received no formal questions about the changes (Harp 1999d). Not that it mattered; after all, many of Kentucky's biology teachers had already been ignoring evolution (and, in most cases, teaching creationism) in their classes. As noted by Nellie Shelton, a biology teacher at Danville High School, "A lot of biology teachers don't touch evolution," and Susan Nichols, a science teacher at Russell Middle School, said that she didn't "want anything to do with the word *evolution*" (Harp 1999c). Kentucky's State Education Commissioner Wilmer Cody said that he "didn't consider [the deletion of *evolution* from the guidelines to be] a substantive matter" (Harp 1999d). Deputy Commissioner Gene Wilhoit followed suit, praising the state's educational guidelines and lauding how the state handled evolution in its classrooms, while simultaneously adding that he and other state officials saw no need to have evolution in the state's educational guidelines: "We don't want to advocate a particular doctrine or a specific view." Although ACLU attorney David Friedman says that the Kentucky law has "serious constitutional problems," the ACLU has received no complaints about the state's endorsement of the Christian version of creationism.

Creationism & Public Opinion

Creationists have consistently failed to get federal courts to grant "equal time" to creationism or to have evolution declared a religion (and de-emphasized accordingly) in public schools. These court decisions have strengthened science education and have helped ban religion from science classrooms. However, in the long run, laws reflect public opinion. As predicted by William Jennings Bryan in his last court speech (on the eighth day of the Scopes trial) in 1925:

> *Causes stir the world, and this cause has stirred the world . . . The world is interested because it raises an issue, and that issue will someday be settled. The people will determine this issue.*

Court decisions such as *McLean v. Arkansas Board of Education* and *Edwards v. Aguillard* have given relief and time to use education to change public opinion. However, as noted by ACLU attorney Jack Novik (1983) after the *McLean* decision:

> *The problem of creationism will persist because it is a legal problem only in part. The law can provide only temporary relief . . . [The solution requires] meaningful science education."*[11]

Court decisions and constitutional practices often have only a limited (and delayed) effect on what happens in schools. For example, many public schools continue to endorse public prayer and give "equal time" to creationism. Although the Establishment Clause of the Constitution protects the rights of

[11] For an excellent discussion of the teaching of evolution, see *Teaching About Evolution and the Nature of Science* at *http://www.nap.edu/readingroom/books/evolution98*.

minorities, even the smallest minority must include at least one person who will seek their rights. In many areas, no one opposes creationism in the science classroom. As a result, many students are taught that creationism is legitimate science.

Creationists reject evolution because it conflicts with their religious beliefs. When such conflicts become lawsuits, the courts can rule on the legal issues only. These decisions often do not affect the cultural and philosophical attitudes about the issues.

The Facts Remain

Darwin established evolution as fact; his conclusions have been affirmed repeatedly with direct evidence and inference. No self-respecting biologist questions whether evolution occurs; we do, however, debate *how* evolution occurs (e.g., Darwin proposed the theory of natural selection to explain the mechanism of evolution; others have proposed other theories, including punctuated equilibrium). An understanding of evolution is a central aspect of scientific literacy; humans *did* evolve from apelike organisms, whether we want to admit that or not. Evolution *is* what unifies biology. Not to teach evolution as *the* central concept of biology is, as biologist Joe McInerney has stated, "educational malpractice."

Claims of creationists have been tested. We know that the claims are incorrect; for example, we know that land plants did not appear before the sun, that Earth did not appear before the sun and stars, that all animals did not originate as vegetarians, and that there was no great flood as collateral damage from cosmic battles between Satan's angels and those of Archangel Michael (see Wise 1998). Yet despite these repudiations, creationism shows more life than ever before (Ruse 1998); almost half of all Americans believe that humans were specially created about 10,000 years ago (Witham 1997). No one doubts the validity of natural laws such as $F = ma$ (force equals mass times acceleration), but more than half of the population rejects the basic tenets of evolutionary biology. Whereas leading scientists reject deity-based "science" (e.g., creationism), many others do not (Larson & Witham 1998).

As the 21st century dawned, the evolution/creationism controversy raged on. Christian fundamentalists continued to demand that their story of creation be taught in public schools as science and that all science be subservient to their dogmatic religious beliefs. Scientists bemoaned the advances made by creationists in public schools, but generally refused to become involved in defending science from the creationists' onslaughts. As a result, creationism became increasingly popular in public schools and on university campuses. Some creationism sympathizers euphemistically referred to themselves as "theistic evolutionists" and/or "secular humanists," whereas others proudly proclaimed themselves to be biblical literalists who rejected evolution altogether as evil. Colleges such as the University of Louisville included many creationists whose ideas were endorsed by sympathetic administrators. Similarly, in the late 1990s, 24% of high school biology teachers in Louisiana were creationists, and 29% considered creationism to be appropriate for their classes. Regardless of guidelines passed by their state Boards of Education, many biology teachers throughout the country continued to ignore evolution altogether (see Christensen 1998; for data regarding how U.S. scientists support creationism, see *Nature* 380: 435, 1997).

Scientists and science educators echoed Thomas Jefferson's warnings about the dangers that a scientifically illiterate public poses to a democracy. In doing so, they often likened the anti-evolution campaigns in Kansas, Kentucky and elsewhere to earlier events in the evolution/creationism controversy (Figure 8.4). For example, in 1925 H.L. Mencken wrote that the Scopes trial convinced him that "enlightenment, among mankind, is very narrowly dispersed." At the close of the millennium, events in Kansas and elsewhere prompted many people to agree.

However, there was hope as this book went to press. Three members of the anti-evolution faction in Kansas lost their seats in the Republican primaries in August of 2000. No doubt there are many changes to come in the light of evolution. Their direction only remains to be seen.

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Decades after monkey trial, debate hasn't evolved much

Theory's detractors say 'popular revolt' under way

By TODD ACKERMAN
Houston Chronicle

Even before he became a Christian, Jeff Farmer was an opponent of evolution.

His interest in such matters was twofold: As a wildlife artist, Farmer studied animal anatomy, and, as a lifelong dinosaur buff, he read voraciously about prehistory. The more research he did, says Farmer, the less concrete evidence he found for evolution.

"I grew up, like most people, assuming evolution was true," says Farmer, a 1987 University of Houston graduate who wrote an opinion column for the Chronicle earlier this month calling evolution a "grand illusion."

"But, ultimately, textbooks on evolution couldn't answer my most fundamental question: Why can't we clearly and convincingly see it in the fossil record?"

Three-quarters of a century after the Scopes monkey trial, Americans' resistance to evolution remains about the same. Since the Kansas Board of Education in August deemphasized teaching that man descended from a common ancestor, newspapers around the country have been inundated with supportive letters to the editor, presidential candidates have taken notice, and polls show as many people reject evolution as accept it.

It's gotten to the point that leading evolution opponents are crowing that a "popular revolt" is under way.

The state of affairs is vexing to scientists, who believe that evolution is as well-documented as Earth's revolution around the sun. To deny evolution often means believing that Earth is less than 10,000 years old, that carbon-dating is false, that life on Earth exists pretty much as it did at the beginning of time. No wonder,

See EVOLUTION on Page 18A.

Figure 8.4. As the millenium came to a close, the creationism-evolution debate raged on. Many of the arguments remained similar to those voiced during the infamous "Monkey Trial" of John Scopes in 1925. This article appeared on the front page of the 19 September 1999 issue of *The Houston Chronicle*.

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Appendix 1

Beliefs About Human Origins and Biblical Literacy

In the following table, "Young Earth Creationists" are people who believe that God created humans in their present form within the last 10,000 years; "Theistic 'Evolutionists'" are people who believe that God guided the process of evolution over millions of years; and "Darwinists" include people who think that evolution does not involve supernatural forces or deity-directed events.

	Young Earth Creationist	Theistic "Evolutionist"	Darwinist
Sex			
Male	40%	45%	15%
Female	54	38	8
Education			
Less than high school	64	29	7
High school graduate	57	35	9
Some college	44	44	12
College graduate	31	53	17
Region			
East	40	45	16
Midwest	47	43	9
South	54	40	7
West	45	40	16
Religion			
Southern Baptist	63	34	4
Other Baptist	67	31	2
Lutheran	47	45	8
Methodist	41	51	9
Presbyterian	39	48	13
Episcopalian	30	57	17
Other Protestant	61	30	9
Catholic	42	50	8
Jewish	14	53	33
Other religion	48	37	15
No religion	16	39	45

Percentage of people, by nationality, who believe that "the Bible is the actual word of God and it is to be taken literally, word for word."

Philippines	54%	Austria	13%
Poland	38%	West Germany	13%
United States	34%	Norway	11%
Northern Ireland	33%	Russia	10%
Italy	27%	New Zealand	9%
Israel	27%	Netherlands	8%
Ireland	25%	East Germany	8%
Slovenia	22%	Great Britain	7%
Hungary	19%		

Sources: Gallup Poll, cited in the September/October issue of *Public Perspective: A Roper Center Review of Public Opinion and Polling* and combined results of Gallup Polls taken in 1991, 1993 and 1997. Also see Ackerman, T. 1999. Decades after monkey trial, debate hasn't evolved much: theory's detractors say "popular revolt" under way. *Houston Chronicle* (19 September), A1.

Appendix 2

Key Court Cases in the History of the Creationism-Evolution Controversy

State of Tennessee v. John Thomas Scopes 1925
Substitute biology teacher John Scopes is convicted of teaching human evolution in Dayton, Tennessee. Scopes' conviction would be overturned in 1927, but the Tennessee law would remain in effect until 1967. Scopes' trial—one of the most influential events of the 20th century—would influence the creationism/evolution controversy for many decades.[1]

John Thomas Scopes v. State of Tennessee 1927
The Tennessee Supreme Court, in a split decision, upholds the Butler Law as constitutional, but reverses Scopes' conviction on a technicality. The ACLU searches for several years to find another volunteer to test the constitutionality of the law, but cannot find one.

Epperson v. Arkansas 1968
The U.S. Supreme Court, in a unanimous decision, rules that banning the teaching of evolution is unconstitutional. This decision is subsequently applied in a variety of other court decisions, including those involving censorship of textbooks, Bible readings in public schools, and academic freedom.

Wright v. Houston Independent School District 1970
This lawsuit—the first initiated by creationists—claims that the Houston Independent School District had violated a student's constitutional rights by teaching evolution without referring to other theories. The lawsuit is dismissed before reaching trial when the judge rules that the free exercise of religion is not accompanied by a right to be insulated from scientific findings incompatible with one's beliefs.

Willoughby v. Stever 1973
Willoughby sues the director of the National Science Foundation and others for funding the pro-evolution textbooks produced by the Biological Sciences Curriculum Study. His lawsuit (*Willoughby v. Stever*) is dismissed by the U.S. District Court in Washington, DC, on the grounds that 1) books supported by taxes allocated to the National Science Foundation disseminate scientific findings, not religion, and 2) the First Amendment does not allow the state to require that teaching be tailored to particular religious beliefs.

Crowley v. Smithsonian Institution 1978
This lawsuit attempting to ban a federally funded evolution-based exhibit is dismissed on grounds similar to those used to dismiss *Willoughby v. Stever* in 1973.

Segraves v. State of California 1981
The Sacramento Superior Court instructs the California Board of Education to recommend a less dogmatic presentation of evolution, but finds that the California science education guidelines give sufficient accommodation to students. In 1989, the anti-dogmatism policy was expanded to include all areas of science, not just those involving origins.

McLean v. Arkansas Board of Education 1982
Federal Judge William Overton rules that 1) Arkansas' "equal time" law is unconstitutional, 2) creation science is religion, not science, and 3) creationism has no scientific significance. Overton's forceful decision destroys creationists' hopes of using "creation science" as a means of forcing the inclusion of religion in science classes of public schools.

Edwards v. Aguillard 1987
The U.S. Supreme Court rules that Louisiana's "balanced treatment" law is unconstitutional. *Edwards v. Aguillard* signals the end of laws demanding "equal time" and "balanced treatment" for creationism in public schools.

Webster v. New Lenox School District #122 1990
The Seventh Circuit Court of Appeals declares that 1) a teacher does not have a First Amendment right to teach creationism in a public school, and 2) a school district can ban a teacher from teaching creationism.

John E. Peloza v. Capistrano Unified School District 1994
The Ninth Circuit Court of Appeals declares that requiring a teacher to teach evolution is not a violation of the Establishment Clause of the U.S. Constitution.

Freiler v. Tangipahoa Parish Board of Education 1997
The U.S. District Court for the Eastern District of Louisiana rules that 1) it is unlawful to require teachers to read aloud disclaimers saying that the biblical version of creation is the only concept "from which students were not to be dissuaded," and 2) proposals for teaching "intelligent design" are equivalent to proposals for teaching "creation science." This ruling was affirmed on 19 August 1999 by the Fifth Circuit Court of Appeals.

[1]Puente, M. (1999). The century's biggest news: list ranks headlines as history—100 events that shifted history. *USA TODAY* (24 February), pp. D1-2. Also see *http://www.newseum.org*.

Appendix 3

Helpful Web Sites Relative to the Creationism-Evolution Controversy

The Internet includes hundreds of Web Sites dedicated to the evolution/creationism debate. The following sites provide a good starting point for your searches; they are well-maintained, include a wealth of information, and include links to related sites.

Background Information

http://ac.acusd.edu/history/classes/civ18/scopes.html
http://www.narhist.ewu.edu/ar/scopes/scopes_urls.html
http://www.germanschool.org/jeff/scopes.html
http://inst.augie.edu/~alcravaa/evolution.html
http://www.courttv.com/greatesttrials/Scopes/
http://www.hononegah.org/museum/Scopes_Folder/Scopes_page-s.htmbackup
http://www.law.umkc.edu/faculty/projects/ftrials/scopes/scopes.htm
http://www.msu.edu/course/mc/112/1920s/Scopes/
http://ohioroundtable.org/tps/offers/scopesaug2399.html
http://ohioroundtable.org/library/articles/ed/scopes.html
http://www.CataLaw.com/dov/docs/dw-scicr.htm
http://www.dimensional.com/~randl/scopes.html
http://www2.idsonline.com/jeff/scopes.html
http://xroads.virginia.edu/~UG97/inherit/1925home.html

Court Cases and Decisions

http://www.bc.edu/bc_org/avp/cas/comm/free_speech/epperson.html
http://www.law.umkc.edu/faculty/projects/ftrials/scopes
http://cti.itc.virginia.edu/~jkh8x/relfree/court/edwa_v_agui.html
http://www.ca5.uscourts.gov/opinions/pub/98/98-30132-cvo.htm
http://cns-web.bu.edu/pub/dorman/edwards_v_aguillard.html
http://cns-web.bu.edu/pub/dorman/epperson_v_arkansas.html
http://cns-web.bu.edu/pub/dorman/lemon_v_kurtzman.html
http://cns-web.bu.edu/pub/dorman/mclean_v_arkansas.html
http://cns-web.bu.edu/pub/dorman/peloza_v_capistrano.html
http://www.talkorigins.org/faqs/peloza.html
http://www.talkorigins.org/faqs/edwards-v-aguillard/html
http://www.talkorigins.org/faqs/mclean-v-arkansas.html
http://www.talkorigins.org/faqs/epperson-v-arkansas.html
http://cns-web.bu.edu/pub/dorman/webster_v_new_lenox.html
http://www.voicenet.com/~joelmacd/cre-evol/legal.html

Inherit the Wind

http://home.inreach.com/gibbo/bhs.lit1h/inherit/links.htm
http://xroads.virginia.edu/~UG97/inherit/contents.html

Key Players

http://talkorigins.org/faqs/darrow.html
http://www.bryan.edu/Scopes/material.htm
http://www.bryan.edu/scopes/inherit.htm
http://www.io.com/~gibbonsb/mencken.html
http://www.law.umkc.edu/faculty/projects/ftrials/scopes
http://www.optonline.com/comptons/ceo/01247_A.html

Organizations, Position Statements, & Opinions

http://dir.yahoo.com/Society_and_Culture/Religion_and_Spirituality/Science_and_Religion/Creation_vs_Evolution/
http://www.natcenscied.org
http://www.nabt.org
http://www.talkorigins.org/
http://www.uni.uiuc.edu/~dstone/evolutionvscreationism.html/

On the Origin of Species

http://www.talkorigins.org/faqs/origin.html

Darwin and the History of Evolutionary Thought

http://www.ucmp.berkeley.edu/history/evolution.html
http://www.nap.edu/reading room/books/

Cartoons

http://www.CataLaw.com/dov/docs/dw-scicr.htm
http://www.law.umkc.edu/faculty/projects/ftrials/scopes/Onion.html
http://www.law.umkc.edu/faculty/projects/ftrials/scopes/sco_phot.htm

Appendix 4
Faith and Courage

William Jennings Bryan, the three-time Democratic nominee for president, was an important player in the Scopes trial and the anti-evolution crusade of the 1920s. When Bryan died five days after the trial (i.e., on 26 July 1925), he was lionized by his followers and others, including President Calvin Coolidge, Supreme Court Chief Justice William Howard Taft, labor leaders, and political leaders throughout the world. Bryan's body was carried by train from Tennessee to Washington, DC; thousands of mourners lined the tracks to pay their respects. Bryan was given a military burial on 31 July 1925 in a pouring rain in Arlington National Cemetery (Koenig 1971).[1]

Virtually all accounts of Bryan's death note that he was buried under the inscription, "He Kept the Faith," and most imply that this inscription was related to Bryan's defense of Christianity in the Scopes trial (e.g., Coletta 1969; Cornelius 1987; Larson 1997 and references therein). Most of these accounts also imply that the "He Kept the Faith" inscription is a dominant part of Bryan's tombstone. When I visited Bryan's grave, I was surprised to learn that his tombstone is not dominated by the "He Kept the Faith" inscription. In fact, the inscription isn't on the tombstone at all (Figure 1).[2]

Just before concluding that the stories about the "He Kept the Faith" inscription were fiction, I noticed that the soil along the back of Bryan's headstone was much higher than in other areas. When I kicked some of the soil away, the "He Kept the Faith" inscription came into view (Figure 2). Rather than being the dominant inscription on Bryan's grave, the inscription is etched in 2-cm-high letters along the rear base of the tombstone. Judging by the coverage of soil and grass, I estimate that the inscription had not been visible for many months, if not years.

Although the linkage of the "He Kept the Faith" inscription with the Scopes trial fits the romanticized image of Bryan's participation in the Scopes trial and the anti-evolution crusade, the inscription was not derived from that trial. Rather, the inscription came from Bryan's remarks to the Democratic National Convention in 1904 (William Jennings Bryan memorial, 1934:

> *You may dispute over whether I have fought a good fight; you may dispute over whether I have finished my course; but you cannot deny that I have kept the faith.*

Whereas William Jennings Bryan was a public figure who often sought publicity, John Thomas Scopes—the man that Bryan tried to convict—was quiet and shy. After his trial, while Bryan prepared a long, rambling statement for the press, Scopes quietly left Dayton and enrolled in graduate school in Chicago, where he studied geology and developed a close friendship with Clarence Darrow. However, Scopes' notoriety followed him; for example, in 1927, the president of the University of Chicago removed Scopes from consideration for a fellowship, telling Scopes that "You can take your atheistic marbles and play elsewhere." Feeling that he had no future as a teacher, Scopes accepted a job with Gulf Oil of

[1]Interestingly, Bryan's burial in Arlington National Cemetery was at Bryan's request; many wondered why a near-pacifist would choose to be buried in a national military cemetery (Koenig 1971). Bryan is buried atop a tree-covered hill in Grave 3121 of Area 4 in the southern part of Arlington National Cemetery.

[2]I thank Michael Lange for helping me obtain the photos in this appendix.

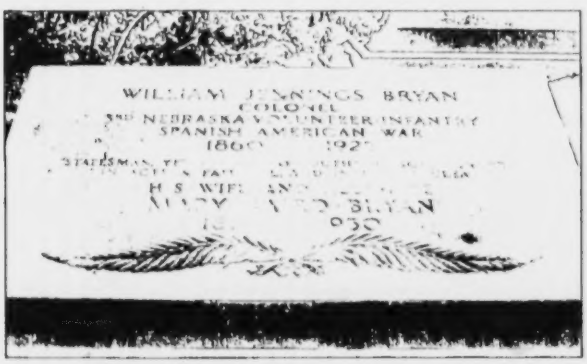

Figure 1. The tombstone of William Jennings Bryan (1860-1925) and Mary Baird Bryan (1861-1930) in Arlington National Cemetery.

Figure 2. Rear views of Bryan's grave. "He Kept the Faith" is inscribed along the base of the grave. The inscription had been covered by soil until just before I took these photographs.

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South America and worked in Venezuela. Although Scopes considered himself a "good agnostic," he married his wife Mildred in 1930 in a Roman Catholic church to please her (Scopes & Presley 1967). That same year, Scopes re-entered the University of Chicago (he wanted to get a Ph.D., but never did), but financial problems caused him to drop out and accept a job with United Gas in Shreveport, Louisiana. In 1960, his wife persuaded him to return to Dayton for the world premiere of *Inherit the Wind* (see Chapter 7). There, in front of the second-largest crowd in Dayton's history, Scopes was honored with a parade and given a key to the city, but was also criticized and called "the devil." While in Dayton, Scopes learned that teachers at his former school were required to sign pledges promising they would not teach evolution. Scopes also realized that had his trial been held in 1960 rather than 1925, he'd still have been convicted. Even today, creationism continues to be taught at Scopes' school (Moore 1999).

After his trial, Scopes sought anonymity and a quiet life away from the events associated with his trial. He refused many lucrative offers to cash-in on his accidental fame. When he rarely spoke about the trial or its aftermath, his message was steady; as he said in 1967:

> *The basic freedom's* [sic] *of speech, religion, academic freedom to teach and to think for oneself defended at Dayton are not so distantly removed; each generation, each person must defend these freedoms or risk losing them forever.*

Although Scopes was overshadowed in Dayton by the clash of Bryan and Darrow, his courage was remarkable. He was denounced as evil, but held his ground.

Whereas William Jennings Bryan's tombstone includes a biography and proclaims his faith, the inscription on John Scopes' tombstone is much simpler: "A Man of Courage" (Figure 3).[3] Scopes is buried in Paducah, Kentucky beside his wife, parents, and sister Lela, who lost her teaching job in Paducah when she would not renounce evolution.

Figure 3. The tombstone of John Scopes (1900–1970) and Mildred Scopes (1905–1990) in Paducah, Kentucky.

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William Jennings Bryan Memorial: Ceremonies Attending the Dedication of the Memorial to William Jennings Bryan. (1934). Washington, DC: US Government Printing Office, p. 60.

[3]Scopes is buried at the corner of Hope Avenue and Myrtle Avenue in section 7, lot 104 of Oak Grove Cemetery in Paducah, Kentucky. Clarence Darrow, the longest surviving major participant in the Scopes trial, died on 13 March 1938. His ashes were spread from Clarence Darrow Bridge into Jackson Park Lagoon in Chicago.

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Appendix 5

A Conversation with Susan Epperson

In the wake of the Scopes trial of 1925, there were efforts in several states to enact anti-evolution laws. In 1928, such a law was voted in by the citizens of Arkansas. There were some unsuccessful efforts in the Arkansas legislature to remove the law, and the ACLU looked for someone to participate in a test of this law. Fearing a repeat of the Scopes fiasco, no teacher volunteered. Consequently, the Arkansas law remained in place for almost 40 years and, though seldom enforced, was an ever-present menace to biology teachers in the state. After all, this law, like any other, could be enforced at any time. Any teacher who taught students about human evolution was committing a crime.

Finally, in the fall of 1965, Susan Epperson, a 10th-grade biology teacher at Little Rock Central High School, agreed to be the plaintiff in a legal test of the Arkansas law. The third and final decision in her case (*Epperson v. Arkansas*) found the anti-evolution law to be unconstitutional and, in the process, freed biology teachers to include this important and unifying concept in their teaching. *Epperson v. Arkansas* was a landmark victory for biology teachers (for more about *Epperson v. Arkansas*, see Chapter 3).

I met with Susan, her husband Jon, and their daughter Elaine Epperson in Colorado Springs, CO in March, 1998 at the offices of the Biological Sciences Curriculum Study. The interview began as Susan handed me the historic photograph that appears as Figure 3.5 in this book.

Susan Epperson, photographed near her home in Colorado: Summer, 1998.

Randy Moore: This is a remarkable photograph.

Susan Epperson: It was taken at a lunch meeting of my husband Jon, my dad, and me, with Jerry Tompkins and Mr. and Mrs. Scopes. At the time our case was beginning, Jerry had just published a book of interviews with various people who played roles in the Scopes trial (*D-Days at Dayton: Reflections on the Scopes Trial*, Baton Rouge: Louisiana State University Press, 1965), so he knew Mr. Scopes and thought it would be a historic event for Mr. Scopes and me to meet. So, in 1969, after the Supreme Court decision, Jerry arranged this meeting in Shreveport, where the Scopes' were living. I am certainly glad I got to meet Mr. Scopes. He was a quiet, completely unassuming man.

RM: What did you talk about?

SE: Some small talk and some remembrances of our cases. He was pleased, of course, that the U.S. Supreme Court struck down the Arkansas anti-evolution law. He told us he was still receiving an average of one letter per day about his case, even though, at that time, his case was more than 40 years old! We had an enjoyable lunch. As we were leaving, Mr. Scopes made it a point to assure me that he supported my effort. He had decided not to attend our original hearing in Arkansas, knowing that his presence would attract a lot of attention and possibly detract from our efforts to have a dignified, low-key trial. But he wanted to be sure I understood that his not being there did not mean he didn't support our efforts. I thought that was very kind of him.

RM: Let's go back to Susan Epperson. How did you become interested in teaching biology?

SE: When you grow up with a biology teacher as a father, it is almost inevitable, I guess! My mother also taught. My dad was a professor of biology at The College of the Ozarks in Clarksville, Arkansas, and so he had been aware for many years of Arkansas' anti-evolution law. Because he knew the word *evolution* stirred the emotions of many, he used the term *progressive development* when he taught evolution in his biology classes. Ironically, since The College of the Ozarks was a church-supported, private institution, it was not under the jurisdiction of the 1928 law, since that law applied only to tax-supported schools.

I remember some afternoons walking over to my dad's office to meet him as he was starting home, and looking at all the fascinating charts and specimens in his classroom. Among many others, I recall the preserved calf embryo with two heads, worms, fossils, and a most impressive sawfish, whose snout looked like the blade of a chain saw, stuffed and mounted on the wall. How could one not get interested in the study of life?

My dad was a committed Christian as well as a biologist. He never saw any conflict between an understanding of God as creator of the world and the processes of evolution taking place in that world. So I grew up with this concept.

After graduating from The College of the Ozarks with a major in biology, I went to graduate school at the University of Illinois in Urbana, where I worked and studied in a lab investigating mosquito resistance to insecticides, including DDT. After receiving a Master's degree, I went to teach high school biology in Little Rock and married Jon a year after that.

RM: When you started teaching at Central High School, were you aware of Arkansas' anti-evolution law?

SE: I had heard of it, but I didn't know exactly what it was. I think I was more concerned about my lesson plans than about this law! But it did bother me that there was such a law. Most biology teachers ignored the law, or just ignored the mention of evolution. There was plenty of other material to cover, it seemed, and I don't think I even mentioned the word that first year. So the law probably did inhibit my teaching somewhat. In the back of my mind, I had concerns about a law that was trying to prevent the teaching of this well-supported and useful theory that clarifies and unifies the study of biology. It was like a cloud over the heads of all biology teachers in the state.

RM: How did your case begin?

SE: In fact, there was almost a case before mine. A biology teacher in another town in the state was planning to teach evolution, get himself arrested, and test the law in a way similar to that in the Scopes case. That teacher asked the Arkansas Education Association (AEA—the state branch of the National Education Association) for advice, and they suggested that they would like to try a different approach, that is, have a biology teacher bring suit as a plaintiff to challenge the constitutionality of the law rather than be the defendant.

I was approached at school one day in the early fall of 1965 by Mrs. Virginia Minor, a fellow teacher at Central representing the AEA, who asked if I might be interested in being that plaintiff. I didn't fully understand what they had in mind, but said I might be interested. When I went home and mentioned it to my husband, he said, "Do It! Do it!" So, I guess Jon should really get the credit for my becoming involved!

A week or two later, I met with Mrs. Minor; Mr. Eugene Warren, the AEA lawyer; and Mr. Forrest Rozzell, Executive Secretary of the AEA, to read a preliminary brief. It was five pages long. Mr. Warren was always careful to explain things to me throughout the process, since legal procedures were pretty foreign to me. The brief plainly stated the dilemma facing any conscientious biology teacher: if a teacher obeyed the law and did not teach evolution (thereby modeling for students the value of being law-abiding), he was omitting a crucially important concept from the course. On the other hand, if he disregarded the law, as most were doing, and taught evolution, he was setting a bad example for young people, choosing to disobey a certain law. Reading the brief, I saw that it expressed my own thoughts about the situation, and the only reason I could think of for not "signing on" was fear of the controversy and the publicity I knew would come. Up until that day, it had never occurred to me there might be anything I could do to bring about any change.

RM: Were you concerned that your case would become a Scopes-like fiasco?

SE: Yes. Thoughts of the Scopes trial were in the back of my mind, and I certainly did not want that type of trial or publicity; neither did Mr. Warren. He assured me that I would not have to testify in court, since he was asking for a declarative judgment that the law was unconstitutional; he felt sure the whole matter could be handled in the judge's chambers with only the lawyers present. That sounded fine to me! At that time, I did not think of the possibility that the case could end up in the U.S. Supreme Court.

RM: What about the other biology teachers at Central High? What did they think of the law and what you were doing?

SE: There were three other biology teachers at Central. They were very supportive of what I was doing, as were most of my other fellow teachers. Since the evolution chapter was near the end of the book, they may not have gotten to the topic in some years, yet they were still interested in having the law removed.

RM: Were you teaching about evolution in your class?

SE: Yes, in the sense that any discussion about different phyla and species and everything in-between includes a discussion of their relatedness. Many teachers ignored the law, as I've said, but others in some places were definitely unable to teach about evolution. The law was detrimental to the teaching of biology.

I taught evolution near the end of the year, after our initial hearing. The text presented it in Chapter 39, and that was a part of what prompted the effort to test the law. I didn't see how I could teach biology properly without including evolution, so I was faced with the very dilemma outlined in Mr. Warren's brief. I wanted to obey all laws. I also wanted to teach all the important concepts in biology, including evolution.

RM: You criminal! Were the other teachers teaching about evolution?

SE: I think so.

RM: Governor Faubus wanted the law retained to keep "way out" teachers in line. You don't look like a "way out" teacher.

SE: Well, I certainly wasn't, and I did not want a courtroom trial to focus attention on me. I was not a publicity-seeking militant! I just wanted to teach biology.

RM: So you filed the complaint.

SE: Yes. My husband and parents and mother-in-law all supported me in the effort. I think it was difficult for my mother, knowing I might receive some negative press and/or mail. But it seemed I had no choice but to get involved. Fear of controversy wasn't a good enough reason to avoid it. Teachers are role models for students, whether they want to be or not. I believe we should set positive examples in how we teach and how we behave outside the classroom, so I had to go ahead and get involved.

Mr. Warren called me early in December to say he was going to file the brief at the court house. Knowing there would probably be a story in the paper the next day, I went to my principal, Mr. Harry Carter, to let him know what one of his teachers was up to! He was completely supportive and told me to contact him immediately if I had trouble from anyone in the building. I greatly appreciated that. I was still afraid of the publicity. The next day, my photo was on the front page of the *Arkansas Gazette* with a short article under a headline something like, "Teacher Challenges Evolution Law." My students were excited about seeing my picture in the paper. A couple of them brought the clipping to school, asking, "Are you for it or against it?" Obviously, they had not read the article!

RM: How did people respond when you filed the complaint?

SE: Most were supportive. Our pastor, a large man, phoned and offered to be my personal bodyguard! One response, which I think I expected, was the conclusion in many people's minds that I was an atheist, even though we had released a statement saying I was a Christian and did not see a conflict with evolution. Both positive and negative letters came in the mail, some including religious tracts and pamphlets. A few tracts were left in my box at school. Some people told me that I was going to hell and that they were praying for me. I am always glad to have people praying for me!

RM: By the looks of all the letters and pamphlets that you received, a lot of people were! What did your students think of what you were doing?

SE: They were excited and curious. I knew I had to take a little time in each class to explain what we were trying to do. After that, I told them I would talk with them after school, or before, but we would spend no more class time discussing the case. I explained that I did not want to destroy anyone's religious beliefs, but that evolution was an important concept which they should study. Most students seemed to be comfortable with this, even though some felt evolution was in disagreement with their religious beliefs.

RM: Was there a lot of publicity about your case?

SE: Yes. I knew there would be some. At the outset, Mr. Warren had asked me for a photo, so my yearbook photo is the one that appeared in the *Gazette*. The Little Rock papers kept pretty close watch on the progress of the case. When the case went to trial, there were wire stories put out by Associated Press and United Press International, and these got into many papers across the country and even in some foreign countries. I received a few letters from soldiers in Vietnam who had read about the trial in the military newspaper *Stars and Stripes*. I was invited to appear on a couple of television shows—one being *I've Got a Secret*, which might have been fun—but I turned them down, not wanting to increase the publicity and also not wanting to miss any days of school. I thought that my absence from school would detract from my teaching and the whole point of the lawsuit. If I was so concerned about being a good teacher, why would I be off going on television and missing classes?

RM: As word got out about your case, did you have any second thoughts?

SE: Not really. I was, and am, glad that I did it. I realized that I was just a vehicle for challenging

the law, but that didn't bother me. I believed in what we were doing. It was the AEA's project and they paid all the costs. The test of the law was not just for me, but for all biology teachers in Arkansas.

RM: The trial, the first one, finally started. It was on April Fools' Day, 1966.

SE: Yes. What a day for a trial! In the fall, Mr. Warren had thought this could be handled just by the lawyers, but the State Attorney General wanted to have a trial, and so I had to testify. Not exactly what I had expected when I signed that brief! Little did I know!

Attorney General Bruce Bennett defended the law for the state. He seemed to want to make the trial into a big publicity vehicle. He said that he had witnesses to disprove the validity of evolution and he was ready for a long trial, with many witnesses to testify about how evolution was contrary to the Bible. Mr. Warren, on the other hand, wanted to stick to issues about the law itself, its wording, and whether it was constitutional, without getting into discussions about evolution. We were challenging the law, not religious or scientific ideas.

I was on the stand less than an hour. Mr. Bennett asked about my religious beliefs but Mr. Warren objected and was sustained. At one point, Mr. Bennett asked if I had heard of "Nitschky's theory of evolution." I thought he might be referring to the German philosopher Friedrich Nietzsche, but I didn't know about any such theory anyway. I asked if he would spell "Nitschky" for me. I think Mr. Warren objected at that point. On the next day, the *Gazette* wondered, tongue-in-cheek, if perhaps Mr. Bennett had been referring to the Green Bay Packers' linebacker, Ray Nitschke!

Mr. Warren consistently objected whenever Mr. Bennett tried to ask witnesses about religious beliefs, and Judge Murray Reed sustained Warren's objections. After a time, it became clear that Mr. Bennett was running out of questions. I remember seeing him flipping through pages, as if wondering, "What do I do now?" With Judge Reed upholding Warren's objections, the argument was kept on track and the hearing was concluded that same day. The AEA was not attempting to prove or disprove evolution; we were merely trying to determine whether the state had the right to deny our right to teach it.

RM: Did Bennett make references to monkeys, as had happened at the Scopes trial and ever since?

SE: It's just about inevitable, isn't it? As I recall, he made a few outside the courtroom.

Jon Epperson: Bennett was playing up the trial for political purposes. He thought that he was on the right side of the issue for re-election. A friend of mine overheard him speaking to someone and saying, "Why is Mrs. Epperson doing this? She's too pretty to come from a monkey!"

RM: Were you coached on what to say?

SE: No. Mr. Warren discussed with me what he thought I would be asked and told me to answer the questions, but not to volunteer more information; if either attorney wanted additional information, it was up to them to ask another question. He also told me to read and be familiar with Chapter 39 of my text, the chapter on evolution. Mr. Warren gave me general instructions on how to conduct myself and how to be a good witness. Other than that, there was no specific coaching. His advice was certainly helpful.

RM: You opened the trial by saying that it was your responsibility to teach your students about evolution.

SE: That was the essence of my answer to Mr. Warren's first question, and was the fundamental issue. I do not think that you should mislead or shortchange students. Academic and intellectual freedom are especially important in the discussion of scientific ideas. It harms the learning process when a law prohibits teaching certain topics. How can anyone teach a course in biology without talking about evolution? I thought then, and continue to think, that academic freedom is important and worth fighting for. An understanding of evolution makes it easier to see how the many forms of life fit together.

RM: You won the case.

SE: Yes. When Judge Reed made his decision public, sometime in May, a reporter phoned me at school to get my reaction. Of course, we were very pleased. For the first time in some 38 years, it was now legal to teach evolution in Arkansas! We expected this would not be the end of the case, though, and it wasn't.

An interesting letter came from a woman in my home church. She wrote of her support and encouragement and told me that when she had been a graduate assistant in Mississippi some years earlier, one of her tasks had been to use a razor blade to cut the pages on evolution out of the biology books!

RM: Holy Cow.

SE: Shocking, isn't it?

RM: The state then appealed the verdict to the Arkansas Supreme Court.

SE: Yes. Attorney General Bennett immediately appealed the decision to the Arkansas Supreme

Court. Their decision came more than a year later. There were no more hearings after the first one, so I did not have to appear in court anymore. I was confident in Mr. Warren, but I also wasn't surprised when the Arkansas Supreme Court overturned Judge Reed's ruling. They announced their decision in June, 1967, just before the summer recess, and then left town! So at least the teaching of evolution *had* been legal for a year!

RM: Then it was on to the U.S. Supreme Court.

SE: Mr. Warren told us that the U.S. Supreme Court hears only a small percentage of the cases that are appealed, so we were happy they agreed to hear ours. That hearing was in October, 1968. By this time Jon had been assigned to the Pentagon and we had had our first child. Living in the D. C. area now, we were able to attend the Supreme Court hearing as tourists along with our friend Jerry Tompkins, who came to town for the trial. I was glad to be an anonymous spectator! Mr. Warren gave us an idea of the day and approximate time our case would come up, so we knew when to be there.

Watching the oral arguments was exciting. Mr. Warren was impressive. He had argued cases before the Supreme Court before and he did an excellent job. We could tell by the tone of the questions, and the state's less than enthusiastic defense, that things were leaning in our direction. I thought that we would win. I felt proud to be associated with the case.

Back in 1966, Mr. Bennett had lost the election in Arkansas. The new Attorney General had sent one of his assistants, Mr. Don Langston, to defend the law before the Supreme Court. I knew Don because we had overlapped a year or two at The College of the Ozarks. He was not very forceful in defending the law, but it was his assigned task. By this time, there were many people in the state, and possibly some in the Attorney General's office, who felt that the law gave Arkansas a bad image and that the state would be better off without it, so the defense was not too vigorous. Jon and I enjoyed a brief visit with Don after the hearing.

RM: Justice Thurgood Marshall asked Attorney Langston during the hearing that, since the Arkansas Supreme Court handled your case with two sentences, would it be okay if they took care of it with just one?!

SE: Yes, he was referring to the two-sentence *per curiam* order handed down by the Arkansas Supreme Court, which did nothing to clear up the questions in the minds of biology teachers about how far the law should go, or to answer the questions that had been posed in the AEA briefs. Questions asked by the justices brought laughter a couple of times during the hearing.

It was clear that the justices wondered why Arkansas had not taken responsibility for clarifying the situation for teachers in their ruling on the law. The Arkansas Supreme Court had not given definitive reasons for reversing Judge Reed's decision. I was concerned at that point that the Supreme Court might return the case to Arkansas for it to be settled there.

RM: A few weeks later the U.S. Supreme Court announced that it was reversing the Arkansas Supreme Court's decision. It was again legal to teach evolution in Arkansas.

SE: Yes, and what a thrill to hear of that decision! I think my first knowledge of the decision came by way of a reporter from *Time* magazine who wanted to come interview me. I was certainly pleased about what this meant for Arkansas and for biology teachers, though I felt somewhat distanced from it, since I was not teaching at that time and most of my energies were spent caring for our home and our son.

RM: Quite a few groups recognized you for your work. For example, the University of Arkansas chapter of the American Association of University Professors thanked you, saying that your case would benefit future generations of students.

SE: Yes, I guess there were a few awards and I certainly appreciated them. It really seems that the leadership of the AEA and Mr. Warren should have received any awards, since they actually did most of the work! It just happened that my name was on the briefs.

RM: It wasn't long after your case that the creationists invented "creation science" as a new way of pushing their agenda.

JE: Yes; that was disappointing.

SE: It surely was. After the first hearing in 1966, I had received a letter from the Creation Research Society in California, so their ideas were not completely new to me. Though they refer to their arguments as science, it seems to me that the creationists have a dogma already in place and are willing to see only evidence to support that, while ignoring evidence to the contrary. Science, on the other hand, seeks answers from the physical world and lets the evidence lead where it may, without having to prove preconceived notions. Creation science does not seem to have much to do with searching out the evidence or with real science. I find their denial of valid scientific research and evidence, and their claims to have proven evolution wrong, insulting to me as a Christian.

RM: Looking back, what do you think of your case?

SE: It seems like it happened a lifetime ago! It was just another small effort toward the right to teach truth and scientific knowledge unhampered by legal restrictions. I am glad the Supreme Court ruled in our favor, but it certainly was not the end of the "battle." As we all know, there have been attempts to force biology teachers to teach "creation science" in their classes as an equally valid alternative to evolution. That may sound very nice and egalitarian, but in fact it seems a little like trying to force the teaching of *Batman* as great literature in the interest of "equal time" in English classes. Creationism and evolution are not two different scientific disciplines. I cannot imagine what a "creation science" curriculum would contain! I have no problem with presenting religious ideas in a religion, history or philosophy class, but they do not belong in biology class. I do not believe the Bible was intended to give a scientific explanation about how the earth and life were created. It is a book about God's love for and relationship to man, and is supremely valuable in that capacity. But I would not go to the Bible to find scientific information.

The God I believe in is big enough to create everything that we can see and study. I do not know exactly how He accomplished it, but I also do not think He would place all kinds of evidence on the Earth just to "fool" us. I believe He gave us our minds to use, and that He is not threatened by our honest searching to learn about the world He made. Some people believe their religion will collapse if evolution is taught in schools, but there is no need for laws to protect God. Our search for knowledge only serves to enhance our wonder and amazement at what He can do! One does not have to choose between learning about science and faith in God.

Our case did not change many people's minds, but I never expected that it would. The disagreement between Biblical literalists and evolutionists will probably not be resolved with everyone in agreement. But I hope our suit has helped teachers to feel a little less intimidated about teaching evolution now.

RM: Your case has been applied in a variety of court decisions, including censorship of textbooks, sex education, and the rights of teachers and students. Every biology teacher in this country owes you a debt of gratitude. On behalf of those teachers, thank you for what you did. I admire you a great deal.

SE: Well, thank you, Randy. Our case was just a small step in the effort to allow the best science teaching possible. As you and I both know, the goal is not fully accomplished. I am happy to have played a role in the ongoing effort.

Susan Epperson is now a part-time teacher of biology, chemistry, and environmental science at Pikes Peak Community College and Colorado University, the Springs, in Colorado Springs. She and her husband Jon live near Colorado Springs.

Appendix 6

A Conversation with Don Aguillard

After *Epperson v. Arkansas* declared anti-evolution laws unconstitutional in 1968, creationists changed their tactics. Rather than try to ban the teaching of evolution, creationists claimed that creationism and evolution were of equal *scientific* merit, and therefore should be given "equal time" and "balanced treatment" in science classes of public schools.

The "creation science" movement was unveiled to the public in the fall of 1970, when Henry Morris (the most influential creationist of this century)[1] offered a course titled "Scientific Creationism" at Christian Heritage College (San Diego, California). That course, which was Morris' first public use of the phrase "scientific creationism," found a believing audience. Soon thereafter, Morris and his creationist colleagues began producing all sorts of textbooks (e.g., *Biology: A Search for Order in Complexity*, published in 1970), newsletters (e.g., *Creation Research Society Quarterly*, published in 1971), and handbooks (e.g., *Scientific Creationism*, published in 1974) to promote their cause. Morris pandered to the faithful with claims that creationism was the source of Americanism (e.g., as in *Creation and the Modern Christian*), whereas evolution was responsible for Nazism, abortion, Marxism, and everything else evil in the world (e.g., as in *The Long War Against God: The History and Impact of the Creation/Evolution Conflict*). According to Morris and his followers, special creation—and not evolution—was the most certain truth of science.

"Creation science" became increasingly popular throughout the 1970s. In 1979, a front-page article in the *Wall Street Journal* warned the country that creationists had built up "a full head of steam" for their attempt to invade the classrooms of public schools.[2] Science education leaders such as William Mayer (the director of BSCS) tried to counter the creationists' efforts, but it was too late. By the early 1980s, "creation science" had flooded the country.

In the 1980s, science educators responded to the threats of "creation science" and "equal time." The first response occurred in 1982 in *McLean v. Arkansas*. In that case, Judge William Overton ruled that 1) creationists are not scientists, 2) creationism has no scientific significance, and 3) creationism is not science; rather, it is religion masquerading as science.

[1]Morris was already a well-known and highly sought-after celebrity among creationists; his book *The Genesis Flood* (published in 1961 with co-author John Whitcomb) proclaimed "the verbal inerrancy of Scripture." *The Genesis Flood* went through 29 printings and sold hundreds of thousands of copies.

[2]"Modern Creationists Seeking Equal Time in U.S. Classrooms." *Wall Street Journal*, 15 June 1979. pp. 1, 30.

Don Aguillard, photographed in Lafayette, Louisiana in March, 1998

A subsequent response to creationists' demands for "balanced treatment" occurred in Louisiana. That lawsuit, brought by biology teacher Don Aguillard, became one of the most famous cases ever to be heard by the U.S. Supreme Court (to learn about Don's lawsuit, see Chapter 6).

I met with Don in Lafayette, Louisiana in March, 1998 to discuss his lawsuit and ideas about the evolution/creationism controversy.

Randy Moore: How did you become interested in science education?

Don Aguillard: I've been interested ever since high school. I attended a small high school in which one teacher taught all of the sciences—biology, chemistry, physics and geology. Everyone was expected to take all of those courses. From the outset, I was fascinated by the logic and beauty of science, especially the way it built on prior knowledge and was based on big, underlying concepts.

I knew all along that I wanted to be a science teacher, so in college I majored in science education. I was especially interested in biology; I took as many biology courses as I could. Of course, I also took other science courses such as physics and chemistry. I didn't like chemistry very much, but I knew that understanding chemistry was critical to understanding biology.

My twin brother also went into science education, but he minored in math education. I didn't

want to lose any hours to a minor; I wanted all of my electives to be in biology.

RM: Were either of your parents teachers? Did they encourage you to become a teacher?

DA: No, but they did encourage me to go to college. I was one of six children, and my parents made it clear that *all* of us were going to go to college. We didn't have a lot of money, and my parents made sacrifices for us. We lived on a big farm; during the summers we explored nature and waited for the bookmobile to come by each week. It was a great childhood. I owe my parents a lot.

RM: What happened after you graduated from college?

DA: In the Fall of 1975 I became a student teacher at Acadiana High School, which is one of the five high schools in Lafayette Parish. Today, student teaching is a full-time, intensive program, but back then I worked with my supervisor for only a half-day every day. Since I was certified in biology, I taught an honors biology course and observed my supervisor teach physics. I never got to see my supervisor teach the course that I was teaching.

While I was student teaching at Acadiana High School, one of the biology teachers moved away, leaving a job that I applied for and got. On 13 December 1975 I finished my student teaching; the next day I started teaching full-time in the room next to my supervisor. I was teaching five sections of general biology.

RM: What a difference a day makes.

DA: Really. It was very exciting, but I had a lot to learn. At the end of my first year, the assistant principal came to my class and observed my teaching. He then told me, "I don't think a single child has understood anything you've said."

RM: Not one?!

DA: Not one! Oh dear! If that had happened today, I'd have been put in a remediation program! Instead, I was assigned to teach two sections of honors biology and three sections of general biology the next year.

RM: Was evolution a central part of your courses?

DA: Yes. We were using Holt's *Modern Biology*, a book that presented evolution as an important theme of biology. There was no denying that evolution—"the *e* word"—was presented as a fundamental tenet of biology, as a logical development of structure and function. Teaching evolution in a biology classroom was not a problem back then.

RM: Did any of the other biology teachers at your high school teach creationism?

DA: No; no one taught creationism at my school. No one mentioned *creationism*, *creation science*, or *young earth*. Back then, creationism and "creation science" were just becoming a problem across the country. Here in Louisiana, the "balanced treatment" law—that is, the law that I challenged—was a classic example of what has happened in other places: the law resulted from a religious legislator—Bill Keith—from a religious area who was pushing religion-based legislation.

I don't know what was driving Bill Keith's decision to introduce his legislation. The community wasn't demanding that creationism be taught. People weren't coming to school board meetings to ask that creationism be included in biology classes. There was no outcry from the community. When Keith's bill was passed by the legislature, most people believed that Governor David Treen would not sign it.

RM: But he did.

DA: Yes. "Balanced treatment" was the law in Louisiana.

RM: Soon thereafter you sued Governor David Treen. How did you become involved in the lawsuit?

DA: It all started in late 1981 and 1982 when I saw an article in *The American Biology Teacher* that mentioned Keith's "balanced treatment" legislation in Louisiana. The article said that people could call the ACLU if they wanted to help fight the creationists. I called the number listed in the article and told the ACLU that I wanted to get involved. Fewer than 10 biology teachers participated in the lawsuit. Most biology teachers would not get involved.

The case started out as *Aguillard v. Treen*. Later in the process, when Edwin Edwards replaced Treen as governor, it became *Edwards v. Aguillard*. Many professional groups joined the lawsuit; we had the support of the entire scientific community.

RM: You must have felt strongly about what you were doing.

DA: Yes. I knew that creationism didn't belong in science classrooms. I couldn't stand by and do nothing.

A few days after I called the ACLU, they called back and asked if I was willing to be the lead plaintiff in the case. I wasn't sure what that meant, but I agreed anyway.

RM: "Lead plaintiff" has a nice ring to it. . .

DA: It sure does! I didn't understand the significance of that position, but I knew I wanted to help. If this was how I could help, then that's what I wanted to do. I was a classroom biology teacher in a public school; I guess that made me a good choice for lead plaintiff. It was appropriate that a high school biology teacher question the constitutionality of the law.

RM: Did you ever have second thoughts about getting involved?

DA: No. I knew that this was important. I was prepared to go through with it.

RM: In *May It Please the Court*,[3] your case is cited as one of the most important Supreme Court cases of the past half-century. When you got involved, did you have any idea that it would become so famous or important?

DA: No; I didn't think that it would get to the Supreme Court. My intent was to correct the law in Louisiana. However, the State Attorney General of Louisiana continually challenged the decisions; every time we won a case, he appealed. I couldn't understand why he appealed every decision. Is that the function of the Attorney General?

RM: Racism has often been linked with creationists' attempts to squash the teaching of evolution and force their ideas into the classrooms of public schools. Was racism ever involved in your case?

DA: No; I don't think so.

RM: Before you decided to become the lead plaintiff in your lawsuit, what were you thinking? What went into your decision? You must have been aware of the Scopes fiasco.

DA: I'd read Keith's legislation; it mandated the establishment of "creationism commissions" to determine the curriculum and course materials of science courses. If any teacher taught evolution, he or she would also have to teach creationism. I thought that was ridiculous, if not wrong. We had virtually no money for supplies, textbooks, or teacher training; nevertheless, we were going to be forced to use those funds to—among other things—publish creationist addendums to biology books. I thought that would damage science education.

I was very concerned about how this law would affect science teachers, science teaching, and science students. I was not ready to pretend that "creation science" was legitimate or that evolution didn't matter. I felt an obligation to get involved. It was not acceptable to sit on the sidelines and watch this happen.

RM: How did people respond to your involvement in the case?

DA: The first thing I did was tell my principal about what I'd done. Then I told my superintendent. Both were very supportive; they felt that I was doing the right thing. Both also told me that I shouldn't worry about losing my job or about being chastised by scientists or science educators. They both wanted me to do what I believed in. Their support was very reassuring.

Every time there was a decision in our case, I received about 75 letters. I threw all of them away. After the first 50 or so, I got tired of reading that I was an atheist and that I was going to hell. They became rather predictable.

RM: Sort of like sweepstakes letters. . .

DA: Yes, but not nearly so positive! When our court decisions were announced, the media called me and the television reporters came to interview me. I got literature and telephone calls from all over the country telling me that what I was doing was wrong. Lots of people questioned my religious beliefs. Local ministers always had a rebuttal for our court victories. One minister on television held up a Bible and said, "This is the science we need to be teaching. This is all the evidence we need."

RM: Holy cow. Do you still get mail about your case?

DA: No, but I just remembered an interesting story. Years after my case was decided, I was selected Louisiana Assistant Principal of the Year. When I went to Chicago to receive the award, I roomed with an assistant principal from Michigan. When I got back to Louisiana after the meeting, there were several boxes of creationist materials awaiting me that he had sent. At the meeting in Chicago he had never told me that he disagreed with my views. I was shocked that a school administrator—an award-winning administrator, no less—was a creationist.

RM: What kinds of things did people send you and tell you?

DA: I got lots of religious tracts; I also received lots of letters blasting me for what I was doing and telling me that I was going to go to hell. All of the letters were unsigned. No one challenged me face-to-face. There were also letters from the Creation Research Society.

RM: When Susan Epperson challenged Arkansas' anti-evolution law in the 1960s, she also received lots of letters. Much of Susan's "fan mail" was positive. Was yours?

DA: No; mine was overwhelmingly negative. There was no "monkey" stuff, but lots of people told me that I didn't believe in God. How did my religious beliefs get into this?! That was very disappointing.

RM: For a while, there were two lawsuits about creationism going on simultaneously in Louisiana: *Keith v. Louisiana* and *Aguillard v. Treen*.

DA: Yes. In *Keith v. Louisiana*, Keith tried to use the courts to declare the "balanced treatment" law constitutional. That's not the purpose of courts; that's why his case was dismissed. That left only *Aguillard v. Treen*.

[3]Irons, P. & Guitton, S. (1993). *May It Please the Court: The Most Significant Oral Arguments Before the Supreme Court Since 1955*. New York: New Press.

RM: Did you ever meet Bill Keith or discuss your case with him?

DA: No.

RM: Wendell Bird had tried earlier to insert himself into *McLean v. Arkansas*, but Arkansas rejected his offer of help. He then came to Louisiana and got involved in your case. Louisiana deputized him; he argued the State's case before the U.S. Supreme Court. Did you ever meet him?

DA: No, I never met him either.

RM: Tell me how your ideas changed as your case moved through the legal system.

DA: In the beginning, I didn't understand where the case might go. But as the case progressed, it became much bigger than I'd originally imagined. It wasn't long before I realized that it had to be decided by the Supreme Court; the Attorney General of Louisiana wasn't going to give up. I wasn't sure that the Supreme Court would hear it.

RM: But it did.

DA: Yes. I knew then that the case would be an important one. However, I didn't know how the justices would vote; I didn't know much about the legal precedents that might affect our case.

RM: Did you attend the hearing at the Supreme Court?

DA: No.

RM: How did you hear about the Court's decision?

DA: The ACLU called me immediately after the decision was announced. I was pleased that we had won. That was very satisfying.

RM: Many public schools continue to promote "balanced treatment" and "equal time" for creationism in science classes, despite clear-cut court decisions stating that those approaches are unconstitutional. Creationism is still taught in science classes at the high school at which John Scopes taught. . .

DA: Yes. Despite all we've been through on this issue—despite the National Science Education Standards, despite the fact that evolution is the unifying concept of biology—many people still question whether evolution should be taught, and many more insist that it be taught "only as a theory." It's incredible that many biology teachers are wrestling with creationism *today*. So many people don't know what science is. That worries me.

Many biology teachers still don't know what was involved in my case, what the legislation said, or why I challenged the law. On the surface, the argument that two "viable" theories should be discussed is compelling; the flaw in the reasoning is that *"creation science" isn't a viable scientific theory*. However, in the early 1980s, "creation science" was a new term; most people were not familiar with it.

RM: The creationists have used many such terms to try to force their views into science classes.

DA: Yes. I remember hearing the phrases *complex initial appearance, young earth theory* and *abrupt appearance theory* and wondering what they meant. It became obvious pretty quickly that they were the inventions of creationists. These are people who want others to believe that God created fossils; according to the creationists, God created Earth only a few thousand years ago, but He made Earth to *appear* much older. This is even more ironic in Louisiana, which gets much of its revenues from oil. Apparently, oil isn't formed as we've all assumed. Rather, the oil deposits were just *put there* by God.

RM: I've also heard the argument that God planted the fossils to make people think that Earth is billions of years old.

DA: Yes. I remember some of the creationists' pamphlets from the early 1980s that promoted the "young earth" idea. They were ridiculous.

RM: Many schools and school districts insert the "it's only a theory" disclaimers in their biology books.

DA: Yes. A parish in Louisiana recently wrestled with the local option for teaching creationism. They rejected the inclusion of creationism in the curriculum, but decided to insert the "it's only a theory" disclaimer in their books. The constitutionality of that issue is now being decided by the courts. It will probably be declared unconstitutional.

RM: In one school district, creationists objected to a textbook's presentation of the "Big Bang" theory. They paid someone to glue the offending pages together to make sure that no student was exposed to the idea.

DA: (laughing) I love it!

RM: It's funny to us, but—as you know—many biology teachers are creationists. I'm lucky enough to get several letters from them every month.

DA: I estimate that about 25% of biology teachers are creationists. Some of these teachers don't include creationism in their biology classes, but they believe that creationism is a scientifically valid concept. My research shows that these teachers were trained very poorly. For example, some teachers in Louisiana don't recall hearing the word *evolution* in their college biology courses. Apparently, many biology professors do not teach evolution. That's scary.

In Louisiana, most biology teachers don't know anything about my case, much less my involvement in the case. They don't know the

basis for their ability to teach evolution and not creationism in their classes.

RM: Now that you're no longer getting any fan mail from creationists, you've started some very interesting research. Tell me more about it.[4]

DA: Several years ago I started pursuing a doctoral degree in science education at LSU. At the first meeting with my advisor, I was leaning toward doing a dissertation about pre-service training. I thought that the creationism issue was dead—if not dead across the United States, at least dead in Louisiana; that's why I wasn't interested in researching the topic for my dissertation. Also, I thought that I had done my part and that it was now someone else's fight.

RM: But you ended up doing your dissertation on evolution and creationism.

DA: Yes. I was wrong. Creationism is alive and well among biology teachers.

RM: John Scopes and others warned people that the controversy would not go away. . . .

DA: They were right. My case certainly didn't settle the issue, but I hope it made a difference. I often have wondered about the people involved in the other cases. Are they still alive? If so, what are they doing? Most descriptions of the court cases make the controversy seem so impersonal. This is not ancient history; it's happening *now*. *People* are fighting this battle *now*.

A while ago I received a letter from a teacher telling me that he had been honored to meet me; he thanked me for my efforts on behalf of biology teachers. I've never quite understood how teachers view my case. I'd like to believe that someone will stand up every time there is a wrong, but I fear that most people are waiting for someone else to be that person. After all, fewer than 10 science teachers in all of Louisiana joined my lawsuit.

RM: Susan Epperson was the only teacher in Arkansas who volunteered to test that state's anti-evolution law. After the Scopes trial, the ACLU searched for many years for another volunteer to test the anti-evolution laws; there were no volunteers. Perhaps someone else would have finally gotten involved, but the fact is that people like you, Susan Epperson, and others were the people who *did* get involved. You also got the criticisms, hate mail, and anonymous calls.

DA: I hope that others will get involved. If I hadn't, we'd now be distributing religious literature in biology classes. If we hadn't won our case, most biology courses in the United States would now include creationism. There would probably be creationism workshops at NABT conventions.

RM: Biologists claim that evolution is the unifying theme of the discipline. Do you think that it's presented that way in high school biology classes?

DA: No, for it's often not even covered. Many teachers claim that they don't have enough time to cover the topic. They say this year after year, but they don't change anything because they don't *want* to teach evolution. Other teachers present evolution as an isolated topic; they won't integrate it into the course. Even though some high school biology teachers claim to spend two weeks on evolution, in fact they devote five class periods to the topic. After you subtract one day for an exam and another for a review session, that means that the teachers are spending only about three periods discussing evolution. When the National Science Standards aren't followed, they aren't of much use.

RM: Court decisions are great in theory, but they often have little practical effect. For example, many schools still sanction prayers, and many others endorse or tolerate the teaching of creationism in science classes.

DA: That's absolutely true. Even the biology teachers who do teach evolution often do so only to the point where they encounter resistance; then they quit. I'm not proud of that.

Here's the sad fact: Evolution is not being taught in many schools. How will this affect literacy? Will we have generations of students who believe that creationism is a valid scientific concept? Will their source of scientific information become churches? It's too bad that those students won't get to see the beauty and logic of science. What a shame.

RM: Scientists have claimed that the solution to this controversy lies in better education. Creationists say the same thing. Has this turned schools into a battleground?

DA: Absolutely. That's why biology teachers have to speak up. In-service programs are not the answer, nor are better textbooks; neither of these things will make any difference if teachers refuse to teach evolution thoroughly and unapologetically.

RM: Most people in the United States believe that creationism should be given "equal time" in biology classes. Do you think that they really want this? Do you think that they want teachers to tell their children about the Native American story of creation? the Druid story of creation? the Hindu story of creation?

DA: Probably not; they want teachers to talk about *their* story of creation, the story that *they* believe in. Recently, a guy came through Lafayette

[4]For more information about Aguillard's research, see "Evolution Education in Louisiana Public Schools: A Decade Following *Edwards v. Aguillard*," *The American Biology Teacher*, 61(3), 182–188.

promoting a creation story based on aliens who came to Earth on flying saucers because they needed gold to repair their atmosphere. According to this guy, those aliens created humans in their image to mine for gold.

RM: Another creationism story to be given "equal time" and "balanced treatment." When will I find time to lecture about flying saucers in my course?!

With such strong public support for the inclusion of creationism in public schools, is it inevitable that creationism will eventually find its way into even more of our science classes?

DA: I hope not, but the threat is real. There are hundreds of local skirmishes going on *right now*. Courts aren't going to deal with creationists' ideas anymore. No state will put creationism in the science curriculum statewide. At the local level, creationists use a religious angle to divide and conquer; they tell school board members that they'll be voted out of office if they don't promote the creationists' agenda. Those grassroots efforts are the most effective way for creationists to convince school boards to include their ideas in the curriculum. If people won't fight back, we'll lose. In my case, just three more votes like Scalia's and Rehnquist's would have put creationism back in science classes.

Creationists are remarkably persistent, and in many areas they are winning the battle. For example, the Louisiana Committee for Scientific Standards has revised the state's exit exam for high school students which students must pass the exam to get their diploma. The Committee identified evolution as a topic to avoid on the test; other such topics to be avoided include incest, the occult, witchcraft, unwed mothers, and drug use. A few people opposed the guidelines, but the guidelines were adopted anyway. It's incredible that evolution is not on the Louisiana state exit exam for high school students. Now teachers have another reason to avoid the topic.

RM: Looking back with 13 years of perspective, what are your thoughts about your case?

DA: The case showed me what a particular special interest group can do to impact public education. It's not just science educators who must be wary; *all* educators must be wary. What topics will be pushed because some group has the ear of a sympathetic legislator?

We must continually be at meetings of textbook adoption committees. We must continually be wary of parents who are members of curriculum-writing teams. We can't turn the curriculum over to the community; if we do, we shouldn't be surprised if they insert their agenda into the curriculum and quality goes down.

We need an effective court system to help us combat bad policies such as Keith's "balanced treatment" law. We also owe a huge debt to the ACLU. What would have happened if they had not been willing to help with the fight? I couldn't have afforded to finance my case. Would NABT or NSTA have come forward with their lawyers to help with the fight? I doubt it. Science would have cut its losses and said, "Louisiana, you're on your own." People wouldn't have cared if Louisiana was doing something stupid, and we'd now have an entire generation of students who would have been taught that creationism is a legitimate scientific idea.

Finally, if NABT doesn't treat this issue as one of its most serious challenges, who will? I hope that people will think about what's at stake here. We can't waiver on this. If biologists lose this battle, there would be no other battles to fight.

RM: Thanks for taking a stand.

DA: I'm happy to have made a difference.

Don Aguillard lives in Lafayette, Louisiana, where he is Director of Management Information Systems for the Lafayette Parish School Board.

Appendix 7

NABT Statement on Teaching Evolution

As stated in *The American Biology Teacher* by the eminent scientist Theodosius Dobzhansky (1973), "Nothing in biology makes sense except in the light of evolution." This often-quoted assertion accurately illuminates the central, unifying role of evolution in nature, and therefore in biology. Teaching biology in an effective and scientifically-honest manner requires classroom discussions and laboratory experiences on evolution.

Modern biologists constantly study, ponder and deliberate the patterns, mechanisms and pace of evolution, but they do not debate evolution's occurrence. The fossil record and the diversity of extant organisms, combined with modern techniques of molecular biology, taxonomy and geology, provide exhaustive examples and powerful evidence for genetic variation, natural selection, speciation, extinction and other well-established components of current evolutionary theory. Scientific deliberations and modifications of these components clearly demonstrate the vitality and scientific integrity of evolution and the theory that explains it.

This same examination, pondering and possible revision have firmly established evolution as an important natural process explained by valid scientific principles, and clearly differentiate and separate science from various kinds of nonscientific ways of knowing, including those with a supernatural basis such as creationism. Whether called "creation science," "scientific creationism," "intelligent-design theory," "young-earth theory" or some other synonym, creation beliefs have no place in the science classroom. Explanations employing nonnaturalistic or supernatural events, whether or not explicit reference is made to a supernatural being, are outside the realm of science and not part of a valid science curriculum. Evolutionary theory, indeed all of science, is necessarily silent on religion and neither refutes nor supports the existence of a deity or deities.

Accordingly, the National Association of Biology Teachers, an organization of science teachers, endorses the following tenets of science, evolution and biology education:

- The diversity of life on earth is the outcome of evolution: an unpredictable and natural process of temporal descent with genetic modification that is affected by natural selection, chance, historical contingencies and changing environments.
- Evolutionary theory is significant in biology, among other reasons, for its unifying properties and predictive features, the clear empirical testability of its integral models and the richness of new scientific research it fosters.
- The fossil record, which includes abundant transitional forms in diverse taxonomic groups, establishes extensive and comprehensive evidence for organic evolution.
- Natural selection, the primary mechanism for evolutionary changes, can be demonstrated with numerous, convincing examples, both extant and extinct.
- Natural selection—a differential, greater survival and reproduction of some genetic variants within a population under an existing environmental state—has no specific direction or goal, including survival of a species.
- Adaptations do not always provide an obvious selective advantage. Furthermore, there is no indication that adaptations—molecular to organismal—must be perfect: adaptations providing a selective advantage must simply be good enough for survival and increased reproductive fitness.
- The model of punctuated equilibrium provides another account of the tempo of speciation in the fossil record of many lineages: it does not refute or overturn evolutionary theory, but instead adds to its scientific richness.
- Evolution does not violate the second law of thermodynamics: producing order from disorder is possible with the addition of energy, such as from the sun.
- Although comprehending deep time is difficult, the earth is about 4.5 billion years old. *Homo sapiens* has occupied only a minuscule moment of that immense duration of time.
- When compared with earlier periods, the Cambrian explosion evident in the fossil record reflects at least three phenomena: the evolution of animals with readily-fossilized hard body parts; Cambrian environment (sedimentary rock) more conducive to preserving fossils; and the evolution from pre-Cambrian forms of an increased diversity of body patterns in animals.
- Radiometric and other dating techniques, when used properly, are highly accurate means of establishing dates in the history of the planet and in the history of life.
- In science, a theory is not a guess or an approximation but an extensive explanation developed from well-documented, reproducible sets of experimentally-derived data from repeated observations of natural processes.

- The models and the subsequent outcomes of a scientific theory are not decided in advance, but can be, and often are, modified and improved as new empirical evidence is uncovered. Thus, science is a constantly self-correcting endeavor to understand nature and natural phenomena.
- Science is not teleological: the accepted processes do not start with a conclusion, then refuse to change it, or acknowledge as valid only those data that support an unyielding conclusion. Science does not base theories on an untestable collection of dogmatic proposals. Instead, the processes of science are characterized by asking questions, proposing hypotheses, and designing empirical models and conceptual frameworks for research about natural events.
- Providing a rational, coherent and scientific account of the taxonomic history and diversity of organisms requires inclusion of the mechanisms and principles of evolution.
- Similarly, effective teaching of cellular and molecular biology requires inclusion of evolution.
- Specific textbook chapters on evolution should be included in biology curricula, and evolution should be a recurrent theme throughout biology textbooks and courses.
- Students can maintain their religious beliefs and learn the scientific foundations of evolution.
- Teachers should respect diverse beliefs, but contrasting science with religion, such as belief in creationism, is not a role of science. Science teachers can, and often do, hold devout religious beliefs, accept evolution as a valid scientific theory, and teach the theory's mechanisms and principles.
- Science and religion differ in significant ways that make it inappropriate to teach any of the different religious beliefs in the science classroom.

Opposition to teaching evolution reflects confusion about the nature and processes of science. Teachers can, and should, stand firm and teach good science with the acknowledged support of the courts. In *Epperson v. Arkansas* (1968), the U.S. Supreme Court struck down a 1928 Arkansas law prohibiting the teaching of evolution in state schools. In *McLean v. Arkansas* (1982), the federal district court invalidated a state statute requiring equal classroom time for evolution and creationism.

Edwards v. Aguillard (1987) led to another Supreme Court ruling against so-called "balanced treatment" of creation science and evolution in public schools. In this landmark case, the Court called the Louisiana equal-time statute "facially invalid as violative of the Establishment Clause of the First Amendment, because it lacks a clear secular purpose." This decision—"the Edwards restriction"—is now the controlling legal position on attempts to mandate the teaching of creationism: the nation's highest court has said that such mandates are unconstitutional. Subsequent district court decisions in Illinois and California have applied "the Edwards restriction" to teachers who advocate creation science, and to the right of a district to prohibit an individual teacher from promoting creation science, in the classroom.

Courts have thus restricted school districts from requiring creation science in the science curriculum and have restricted individual instructors from teaching it. All teachers and administrators should be mindful of these court cases, remembering that the law, science and NABT support them as they appropriately include the teaching of evolution in the science curriculum.

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Adopted by the Board of Directors March 15, 1995. Revised October 1997. Endorsed by: The Society for the Study of Evolution; June, 1998; The American Association of Physical Anthropologists; July, 1998.

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Notes

NABT: The Leader in Life Science Education

The National Association of Biology Teachers (NABT), formed in 1938, is comprised of nearly 8,600 biology and life science educators and administrators—representing all grade levels—from the U.S. and abroad. NABT's mission statement is: *The National Association of Biology Teachers empowers educators to provide the best possible biology and life science education for all students.*

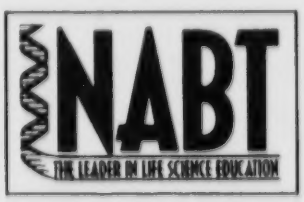
Membership in NABT includes a subscription to the association's nationally recognized journal, *The American Biology Teacher*, and its newsletter, *News & Views*, as well as discounts on special NABT publications. NABT Position Statements on issues of importance to the biology/life science teaching community are available free of charge to members. NABT holds a national convention each fall and sponsors seminars and workshops throughout the country designed to update and improve teachers' knowledge on topics of current concern.

The association directs numerous educational projects funded through outside grants. Current projects include: *Encouraging High School Student Research in Biology Through Teacher-Scientist Partnerships*, funded by the National Science Foundation (NSF); *High Quality Biotechnology Education Through a Shoestring, Hands-On Approach*, funded by NSF with additional support from Life Technologies, Inc., Medial Seek, Inc., and Genentech, Inc.; and *The Microbial Literacy Collaborative*, in cooperation with the American Society for Microbiology, and others.

NABT also offers:

- An awards program to recognize outstanding biology/life science educators for excellence in classroom instruction.
- The opportunity to become active in the profession by joining committees and participating with colleagues in projects of mutual concern.
- Special rates on insurance in the Trust for Insuring Educators for professional liability, health, accident, auto, and life policies.

For additional information, contact NABT at 12030 Sunrise Valley Dr., #110, Reston, VA 20191-3409/(703) 264-9696/nabter@aol.com or visit the association's Web site at www.nabt.org. NABT's Executive Director is Wayne W. Carley.



Nothing in biology makes sense except in the light of evolution.
—Theodosius Dobzhansky, 1973

If the Bible and the microscope do not agree, the microscope is wrong.
—William Jennings Bryan, 1925

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